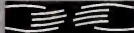


# Developing national emergency prevention systems for transboundary animal diseases

## EMERGENCY PREVENTION SYSTEM

E M P R E S



EMERGENCY PREVENTION SYSTEM

FOR TRANSBOUNDARY  
ANIMAL AND PLANT  
PESTS AND DISEASES

(LIVESTOCK DISEASES COMPONENT)

Food  
and  
Agriculture  
Organization  
of  
the  
United  
Nations



# Developing national emergency prevention systems for transboundary animal diseases

FAO  
ANIMAL  
PRODUCTION  
AND HEALTH  
PAPER

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Report of the FAO Expert Consultation on Development  
of the Emergency Prevention System for Transboundary  
Animal and Plant Pests and Diseases (EMPRES)  
(Livestock Diseases Programme) and Review of the  
Global Rinderpest Eradication Programme (GREP)

Rome, Italy, 14-16 July 1997

Food  
and  
Agriculture  
Organization  
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the  
United  
Nations



Rome, 1997

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## 1. INTRODUCTION

### 1.1. Introduction

The Emergency Prevention System (EMPRES) for Transboundary Animal and Plant Pests and Diseases is a concept, first raised at an FAO Council in 1994, which addresses pests and diseases with serious impact on food security. This concept was endorsed by the World Food Summit in 1996, through Commitment 3 of the Rome Declaration on World Food Security–The World Food Summit Plan of Action.

Objective 3.1. of the Plan of Action states that

*“governments, in partnership with all actors of civil society, and with the support of international institutions, will, as appropriate seek to ensure effective prevention and progressive control of plant and animal diseases, including especially those which are of transboundary nature, such as rinderpest...”*

This Commitment was in response to the awareness by the Heads of State and Government of the actual and potential impact of these diseases upon livestock. The diseases which are transboundary in nature are the principle concern of FAO and are the target of its current strategy for assuring food security. The mandate is to establish emergency prevention systems for transboundary animal and plant pests and diseases. The animal disease component is designed to: “promote the effective containment and control of the most serious epidemic livestock diseases as well as emerging diseases, by progressive elimination on a regional and global basis, through international co-operation involving early warning, rapid reaction, enabling research and co-ordination”.

The first EMPRES Expert Consultation, held in 1996, identified the target diseases as those of strategic importance, those requiring tactical attention and those evolving or emerging diseases. Of the first group, rinderpest was considered to be the most important. The principal thrust for EMPRES since its inception has been to promote the global eradication of rinderpest. EMPRES has played a major role in defining the plans and strategies by which this may be achieved and developed a ‘Blueprint’ for its final eradication by the year 2010. The Expert Consultation which took place 14-16 July, 1997 addressed the following issues;

- the implications of the Rome Declaration on World Food Security and the World Food Summit Plan of Action,
- the development of national and regional capacity to implement the EMPRES principles for the eradication of rinderpest and control of other transboundary diseases,
- the progress of the GREP in Asia and Africa,
- guidelines on cessation of vaccination and the achievement of sustainable and verifiable freedom from rinderpest,
- review of the OIE Pathway and chapter on rinderpest in the OIE International Animal Health Code.

## 1.2. Opening address

The Expert Consultation was officially opened by Dr A. Sawadogo, FAO Assistant Director-General, Agriculture Department. The welcoming address was given by Dr T Fujita, FAO Director of the Animal Production and Health Division, the text of which was as follows;

Ladies and gentlemen, I am pleased to be with you this morning in opening this second EMPRES-Livestock Expert Consultation. Welcome to FAO headquarters and thank you for taking time from your busy schedules and travelling here to attend this important session.

Last year's Technical and Expert Consultations focused on a terrible plague of cattle in the developing world, rinderpest. These consultations entitled "The World Without Rinderpest", yielded a blueprint for global eradication of this disease by 2010. Many of you participated and helped us to define better the concept for EMPRES and the strategy for defining transboundary animal diseases of concern to EMPRES. You wished that the issues of transboundary animal diseases in general and rinderpest eradication in particular be given the necessary political support through the World Food Summit.

I am pleased to note that The World Food Summit held here at FAO headquarters in November of 1996 did fulfil this recommendation. The Summit crystallised FAO's commitment and focus to securing food for all. Epidemics of rinderpest threaten stable food production in developing areas of the world. The FAO has maintained the primary role of co-ordinating the global eradication of this dreaded disease.

After the Summit, the Director-General has instructed all Technical Divisions, including AGA, to examine their activities in the light of the World Food Summit Plan of Action. He has further singled out the Special Programme on Food Security and EMPRES as issues which should have overriding importance in the FAO global programme. To reflect this desire, FAO's Livestock Programme has been restructured for the coming 1998/99 biennium. This Programme, which is to be implemented through two Services—the Animal Health and Animal Production Services—now has four main domains. The first domain deals with livestock policies including veterinary services. The second deals with livestock production systems including animal health in three farming systems: mixed, peri-urban, and pastoral. The farming systems approach should make our sub-programmes relevant to the Special Programme on Food Security. This Special Programme has a livestock component which lays particular emphasis on the role of the short-cycle livestock, like small ruminants, pigs and poultry. The third domain deals with the animal genetic resources. The fourth domain deals with Transboundary Animal Diseases, the subject of this Expert Consultation.

I look forward to your deliberations and recommendations on how EMPRES activities can enhance the implementation of the Commitments of the World Food Summit.

This year, two major themes for the Expert Consultation are planned. The themes follow the intent of last year's technical and expert consultation, namely, to eradicate rinderpest from the world. Your chairman and the secretariat have selected the theme for rinderpest which is entitled "management of the transition from vaccination to a sustainable and verifiable freedom from rinderpest". I believe that this will enable you to discuss one of the concerns of the Summit, namely the effective prevention and progressive control of transboundary animal diseases. Member Countries that are involved in the GREP and regional organisations, such as the OAU/IBAR, that are involved in co-ordinating regional programmes, like PARC, look to the guidelines to be provided through this Expert Consultation. They seek to know how to

consolidate gains achieved in rinderpest control, without significant reversal of such gains, until the objective of global eradication is attained by the year 2010.

The second theme notes the need for emergency preparedness and watchfulness at the farm and national levels for rinderpest and other epidemic diseases.. This theme is entitled "Developing EMPRES-Livestock at the national level". As a former Chief Veterinary Officer for my country, Japan, I am well aware of the difficulties in convincing the national treasury to finance a veterinary 'standing army' in the absence of epidemic diseases. I am also aware how much more difficult it must be for national veterinary services of developing countries to convince their national authorities to finance the effective prevention and progressive control of epidemic disease, which may be relatively rare, against the background of immediate needs of visible deficiencies in social and agricultural systems.

Yet we all know that sustained livestock production and trade in livestock and livestock products are practically impossible in the presence of epidemic diseases. These diseases contribute to banishing many areas of the world to subsistence livestock farming and thus to poverty. We in FAO look forward to your deep analysis of the impact of transboundary animal diseases and your recommendations to Member Countries and to FAO on how to promote the EMPRES concepts at national, regional and global level in a way that will lead to sustained economic livestock production, reduction in hunger and poverty.

Ladies and gentlemen, the task before you is important yet complex and difficult, especially given the short time you have for deliberations. I wish you well in the consultation. FAO looks forward to working with you at this Expert Consultation and in the future.

## **2. SUMMARY**

### **2.1. Developing National EMPRES**

EMPRES activities during the year have continued to focus on the co-ordination and strategic planning of GREP. The molecular analysis of the virus strains active in the rinderpest epidemics has given a greater understanding of the evolution of outbreaks and has assisted in the planning of the control activities. EMPRES has assisted in many emergency situations resulting from epidemics of transboundary disease. This assistance has been given through Regular Programmes and Trust Fund Technical Co-operation Projects (TCP) to address issues of emergency preparedness in the affected country and the regional significance of the epidemic.

A clear need has been recognised to extend the principles of EMPRES in dealing with the epidemic diseases to regional and national levels. This will be achieved initially by creating clusters of countries in regions where, because of foci of rinderpest, GREP is most active. The national authorities will be approached at ministerial level to introduce the EMPRES approach. A regional EMPRES presence is required to develop, train and co-ordinate the cluster of national units. Priority should be given to improving communications systems by e-mail, both within and without the country. The training will concentrate on establishing the principles and systems required for effective early warning, early reaction and emergency preparedness capacity. The expert consultation emphasised the urgent need for countries to improve their capability in these areas especially as they cease vaccination. It also endorsed the view that a regional EMPRES presence was essential to facilitate this.

World trade in livestock now demands that countries establish effective early warning systems and emergency contingency plans to protect the continuity of their trade and gain a premium for both them and their trading partners.

### **2.2. Review of the GREP activities in Africa**

Six (6) countries in Africa have made an official declaration to OIE of provisional freedom from disease. Four (4) other countries have either stopped vaccination or have indicated that they will do so and make provisional declarations to the OIE soon. However;

- thirteen (13) countries have fallen at least 6 months behind the Blueprint schedule,
- twelve (12) of these countries have not yet made provisional declarations of freedom from disease, and
- Tanzania became infected

It is clear that in some countries where rinderpest is present or suspected, civil war is still a major impediment to vaccination and disease surveillance.

Countries are expected to implement active clinical disease searching and epidemiological surveillance before or at the time of stopping vaccination. However, not all of the countries that have stopped vaccination have implemented such surveillance.

### **2.3. Review of the GREP activities in Asia**

Progress towards internationally recognised freedom from rinderpest has been slower than was anticipated a year ago. This is largely due to the lack of internationally co-ordinated regional programmes for south Asia, west Asia and the Arabian Peninsula and the fact that large areas of Asia remain effectively outside of the GREP. A concerted effort by the EMPRES Unit is essential to increase awareness of the GREP and promote adoption of its principles. Ultimately, progress towards recognised and sustained freedom from rinderpest

for the Arabian Peninsula will require eradication of the disease from Africa and Asia and regional co-ordination of national programmes.

In the SAREC region, India and Bhutan remain on schedule, according to the Blueprint, on the OIE Pathway. Nepal, Sri Lanka and Bangladesh did not make declarations of provisional freedom at the end of 1996, and are now behind schedule. Pakistan remains endemically infected with rinderpest, and so is Afghanistan. Progress is expected to accelerate in the next year with full implementation of EC-funded country and regional projects under the SAREC umbrella.

The situation in the Near and Middle East has improved marginally with all countries free of clinical disease except for some countries of the Arabian Peninsula. Rinderpest infection is persisting in Saudi Arabia and the Yemen. However, of the twelve (12) countries expected to make declarations of provisional freedom from disease none have yet done so, and vulnerability to reintroduction of infection is increasing.

The former Commonwealth of Independent States (CIS), Russia, Armenia, Azerbaijan, Mongolia and China appear to be free from rinderpest but have not made the scheduled declarations of provisional freedom. Effectively they remain outside of the GREP.

#### **2.4. Managing the transition from vaccination to sustainable and verifiable freedom from rinderpest**

The main points in the papers 'Managing the transition from vaccination to sustainable and verifiable freedom from rinderpest' and 'Guidelines on emergency preparedness and contingency planning', to be published as separate documents, were accepted. The following were identified as key considerations in making the decision to cease vaccination;

- the expectation that rinderpest virus is no longer present in the population,
- the existence of a disease reporting system that would quickly detect rinderpest if it was introduced into the population,
- effective border controls which would prevent reintroduction of rinderpest,
- preparedness to implement rinderpest surveillance procedures in accordance with the published OIE standards and FAO/IAEA guidelines,
- preparedness to invoke emergency actions to deal with any rinderpest outbreaks.

A proposed reduction in the period of surveillance required to qualify for freedom from infection—either by commencing sero-surveillance one year following the cessation of vaccination, or by sampling larger numbers of herds—was discussed. However, the Expert Consultation concluded that any reduction in the minimum time to qualify for a declaration of freedom from infection would increase the risk of not detecting residual foci of disease and increase overall costs. This suggestion was therefore rejected.

### 3. RECOMMENDATIONS

#### 3.1. EMPRES thematic issues

Transboundary livestock diseases have serious consequences for food security as well as international trade for affected countries. Recent epidemic disease outbreaks have occurred in Taiwan (FMD), The Netherlands (CSF), Botswana (CBPP) and Tanzania (CBPP, rinderpest). These outbreaks have cost billions of dollars in direct and indirect losses to the livestock industries. The losses would have been minimised by earlier detection resulting from implementation of the principles of early warning, early reaction, and emergency preparedness.

The FAO Conference and the World Food Summit have strongly supported the EMPRES mandate to promote the effective containment and control of the most serious epidemic livestock diseases. Therefore, it was recommended that FAO assist Member Countries to enhance their preparedness to counter these serious livestock diseases. Specifically in respect to these thematic issues concerning EMPRES, the Expert Consultation recommended that;

##### 3.1.1. *In respect of emergency preparedness*

Member Countries include animal health emergencies (such as rinderpest epidemics) as a component of their national Natural Disaster Plan. This will allow essential government services to be more quickly called upon to support veterinary services in the emergency disease control campaign.

##### 3.1.2. *In respect of planning for emergencies*

Member Countries appoint a high level National Animal Disease Emergency Committee (including representatives from all relevant ministries and stake-holders) to co-ordinate national preparedness and national eradication programmes for serious epidemic livestock diseases.

##### 3.1.3. *In respect of national veterinary services*

Member Countries establish strong central veterinary authorities with clear lines of authority in order to deal effectively with transboundary diseases.

##### 3.1.4. *In respect of a national EMPRES unit*

Member Countries establish an EMPRES unit led by a senior veterinary officer within the national veterinary service headquarters as the co-ordinating group for implementation of policies and programmes formulated by the National Animal Diseases Emergencies Committee.

##### 3.1.5. *In respect of contingency plans*

Member Countries prepare documented contingency plans for rinderpest and other important transboundary diseases which they perceive to be of highest threat. Veterinary officers involved in preparation and implementation of these plans will need to receive comprehensive training.

##### 3.1.6. *In respect of regional co-operation*

FAO act as a catalyst in the adoption of EMPRES at the national level by assisting the development of 'clusters' of countries within a region and with similar disease problems to co-operate closely in their disease prevention and control programmes.

##### 3.1.7. *In respect of the formation of 'clusters' of countries*

FAO promote the formation of country 'clusters' through ministerial meetings and existing regional organisations such as OAU, SAARC, and ASEAN.

### *3.1.8. In respect of a pilot programme of 'clusters' of countries*

FAO identify, as a pilot programme, several small 'clusters' of countries using the following criteria (see Table 1. and Table 2. in Appendix 6.);

- the role of the livestock production systems in the agricultural economy and food security,
- the interest among local, national and regional stake-holders to combat and prevent epidemic diseases,
- the socio-economic impact of transboundary diseases,
- the epidemiological situation in adjacent countries based upon epidemic risk and ecosystem,
- the technical feasibility to reduce and contain the disease problem,
- the existence of regional organisations able to facilitate implementation.

### *3.1.9. In respect of the adoption of EMPRES*

FAO form 'clusters' of countries in key regions to support the GREP as the first phase in the adoption of EMPRES at the national level, and that development of 'clusters' for other EMPRES diseases be considered in the second phase of development (see Table 1 in Appendix 6.).

### *3.1.10. In respect of regional EMPRES personnel*

FAO progressively appoint at least three (3) regional EMPRES co-ordinating officers—one each in Africa, the Middle East, and south Asia. These appointments, together with adequate operating funds, are considered critical to the success of national EMPRES programs within the pilot 'clusters'.

### *3.1.11. In respect of national veterinary services*

FAO facilitate within national veterinary services, rapid global communication on animal transboundary diseases through electronic communication systems (e-mail connections, audio-visual training aids).

### *3.1.12. In respect of a media strategy for EMPRES*

FAO develop and implement a media strategy for the national and international promotion of EMPRES principles.

### *3.1.13. In respect of contingency funding*

Member Countries seek contingency funding for the effective implementation of emergency prevention systems including the operations of the national livestock EMPRES. The expert consultation suggested that such resources could be acquired by inclusion as a component of debt relief. It was recommended that FAO assist Member Countries in bringing this concept to the attention of appropriate organisations such as the World Bank, IFAD and the IMF.

### *3.1.14. In respect of non-government organisations*

FAO seek NGO financial support for regional and national EMPRES activities and in particular inform and seek their participation in the GREP.

## **3.2. Disease information systems for EMPRES**

The development of the transboundary animal disease information system was discussed and the Expert Consultation recommended that;

### *3.2.1. In respect of the roles within the information system*

FAO EMPRES define its role relative to that of the OIE, regional organisations and Member Countries within the information system and that this role include;

- verifying and validating information generated at the country level and assisting countries to identify and investigate rumours and suspect cases,
- identifying spatial and temporal disease patterns of significance,
- warning countries of, and facilitating rapid co-ordinated response to, potential adverse developments which present a significant risk of spread of priority diseases,
- supporting and developing innovative approaches to surveillance and information systems from the village level up,
- presenting the global picture of the actual and potential spread of priority diseases following collation, analysis and presentation of data collected at the national and regional levels.

#### *3.2.2. In respect of support for regional organisations*

FAO, in developing the EMPRES information system, supports regional organisations and, through them, countries in the activities listed in section 3.2.1.

#### *3.2.3. In respect of planning of the system*

FAO, in planning the EMPRES disease information system, clearly defines the objectives of the system, the data needed and its purpose. It was recommended that the system be developed with an initial focus on GREP or, in those countries where rinderpest does not present a risk, on one of the priority diseases identified by the country.

#### *3.2.4. In respect of the phases of development of the system*

FAO consider short, medium and long term phases in the development of the information system over a 4-6 year time scale including time for planning and skills development. These phases would involve;

*–in the short term,*

- verification and validation of data and surveillance systems,
- assist countries in the assessment of their surveillance and information systems system and in improving performance and usefulness in supporting decision making.

*–in the long term,*

- using Geographical Information Systems (GIS) to look at spatial and temporal patterns of disease, animal and human movement and changes in the production and marketing systems as they relate to the occurrence of priority and emerging diseases.

### **3.3. Progress towards rinderpest eradication in Africa**

The progress made by countries and the regional organisation in the eradication of rinderpest and the performance of countries in adhering to the time-table for declaring freedom from disease was reviewed and the Expert Consultation recommended that;

#### *3.3.1. In respect of awareness of the Blueprint timetable*

FAO ensure that countries are fully aware of the Blueprint timetable and the progress made on it by themselves and their neighbours. This could be facilitated by FAO and by OAU/IBAR PARC through routine publication in their bulletins and on the Internet.

#### *3.3.2. In respect of countries that are behind schedule*

Member Countries which have fallen behind the Blueprint schedule are encouraged, through GREP and PARC, to re-establish their position on the OIE Pathway. Where appropriate, countries are strongly encouraged to make provisional declarations of freedom from disease to the OIE and their neighbours.

### *3.3.3. In respect of national surveillance systems*

Member Countries which do not have a national surveillance system in place are encouraged, as a matter of urgency, to do so.

### *3.3.4. In respect of the sanitary cordon*

PARC re-evaluate and strengthen the existing sanitary cordon in Central Africa. The possibility of establishing a new sanitary cordon further east towards the source of infection in Sudan is encouraged. It was recommended that the sanitary cordon be comprised of two (2) zones;

- a buffer zone of well vaccinated cattle within which there is active surveillance for disease and cattle movement, and
- on the disease-free side of this zone, a separate zone of intensive surveillance for presence of clinical signs of disease and within which vaccination is not carried out.

### *3.3.5. In respect of areas affected by civil war*

FAO, PARC and other organisations involved in the GREP find new approaches towards rinderpest eradication in those infected areas afflicted by civil war and, where possible, implement and assess the effectiveness of these approaches.

### *3.3.6. In respect of 'clusters' of countries*

Member Countries support the concept of improving progress along the OIE Pathway by forming 'clusters' of countries with similar epidemiological profiles.

### *3.3.7. In respect of re-infection from Asia*

Co-ordinating organisations in the GREP take active steps to reduce the possibility of re-infecting Africa from Asia, including closer co-operation between east African countries and known infected countries such as Yemen and Saudi Arabia.

### *3.3.8. In respect of the review of progress*

Co-ordinating organisations in the GREP review and report on the progress of countries along the OIE Pathway and in relation to the Blueprint timetable, every 6 months.

## **3.4. Progress towards rinderpest eradication in Asia**

The progress made by countries in the eradication of rinderpest and the performance of countries in adhering to the time-table for declaring freedom from disease was reviewed and the Expert Consultation recommended that;

### *3.4.1. In respect of awareness of the GREP*

FAO enhance the awareness of the GREP in many parts of Asia and bring countries into active participation. The need for this is especially urgent for the southern, former CIS countries which are at significant risk of rinderpest invasion through livestock trade.

### *3.4.2. In respect of the situation in Pakistan*

FAO request the anticipated international assistance for rinderpest eradication in Pakistan be implemented without delay as the continuing persistence of rinderpest in this country remains a cause of grave concern for neighbouring countries and trading partners.

### *3.4.3. In respect of the situation in west Asia and the Arabian Peninsula*

FAO urgently establish international co-ordination for the regions of West Asia and the Arabian Peninsula to protect against reintroduction of rinderpest.

### *3.4.4. In respect of the situation in Yemen*

FAO must identify external assistance to resolve the situation in Yemen as persisting rinderpest infection is of major concern.

#### *3.4.5. In respect of the situation in Saudi Arabia*

Saudi Arabia enhance its surveillance capability and implement an effective eradication programme.

### **3.5. Managing the transition from vaccination to sustainable and verifiable freedom from rinderpest**

The increased risks to countries ceasing vaccination and the minimum length of time from ceasing vaccination to freedom from infection was discussed by the Expert Consultation which recommended that;

#### *3.5.1. In respect of the risk of reintroduction of infection*

Countries considering stopping vaccination, but which are unable to reduce the risk of re-introduction of rinderpest from neighbouring countries to an acceptable level, only proceed along the OIE Pathway as part of a regionally co-ordinated programme.

#### *3.5.2. In respect of resources for surveillance and emergency action*

Countries ceasing vaccination make available resources for surveillance and emergency action to control the risk of either possible residual disease foci or re-introduction of disease. Making these resources available is justified as the costs of proceeding on the OIE Pathway to freedom from rinderpest are lower than the costs of continuing vaccination indefinitely.

#### *3.5.3. In respect of guidance to countries declaring provisional freedom*

The OIE issue guidance to countries declaring provisional freedom from disease as to the critical importance of having an effective surveillance system and prepared contingency plans in case of the reintroduction of rinderpest disease.

### **3.6. Performance indicators**

Performance indicators are an invaluable tool in the assessment of the effectiveness of all disease control programmes. The Expert Consultation recommended that;

#### *3.6.1. In respect of the development of performance indicators*

The Joint FAO/IAEA Division prepare and publish a set of performance indicators for rinderpest surveillance in countries ceasing vaccination and proceeding down the OIE Pathway. It was recommended that these indicators be field tested and validated in each of the key regions of the GREP.

#### *3.6.2. In respect of the polio vaccination programme*

The Joint FAO/IAEA Division make use of the experience gained by the World Health Organisation (WHO) Expanded Programme on Immunisation (EPI) to develop appropriate performance indicators for rinderpest surveillance.

#### *3.6.3. In respect of rinderpest surveillance procedures*

Co-ordinating organisations in the GREP use performance indicators for all GREP activities, but, in particular, for the assessment of effectiveness of surveillance for rinderpest.

### 3.7. Rinderpest diagnosis, vaccines and surveillance

The Expert Consultation discussed research priorities of the GREP and recommended that;

#### 3.7.1. *In respect of rinderpest diagnosis*

- the sensitivity of pen-side tests be increased and include a differential diagnosis capability for the rinderpest-like diseases,
- the competitive enzyme-linked immunosorbent assay (ELISA) test satisfy performance requirements for sero-surveillance,
- additional monoclonal antibodies be produced against rinderpest and *Peste des Petits Ruminants* (PPR) viruses to establish monoclonal antibody panels for epidemiological investigations, and
- the antigen detection ELISA be further developed and standardised.

#### 3.7.2. *In respect of rinderpest vaccines*

- complete the evaluation of the PPR strain vaccine for control of rinderpest,
- validate assays to discriminate animals vaccinated with PPR vaccine from those infected with rinderpest,
- develop recombinant vaccines for protection against rinderpest, and
- develop markers in rinderpest and PPR vaccines.

#### 3.7.3. *In respect of rinderpest diagnosis*

- investigate the possibility that rinderpest vaccine RNA can be detected by the polymerase chain reaction (PCR) method in eye swab samples taken at different times after vaccination.

#### 3.7.4. *In respect of pathogenicity and epidemiology of rinderpest virus*

- investigate if mild strains of rinderpest virus become virulent during serial passage by contact in cattle,
- investigate if rinderpest virus is maintained by small ruminants and/or transmitted from small ruminants to cattle and vice versa, and
- investigate if there is a wildlife reservoir for mild strains of rinderpest virus when concerns arise about its existence.

#### 3.7.5. *In respect of funds for research*

- the FAO Rinderpest World Reference Laboratory-Pirbright (WRL) and Centre de Cooperation Internationale en Recherche Agronomique pour le Development (CIRAD-EMVT) requires additional financial support for research,
- donor financial support be sought for essential research, and
- the need for additional funds for research be brought to the attention of the EC and the Assistant Director General of the FAO.

#### 3.7.6. *In respect of surveillance for rinderpest*

- the surveillance of wildlife for evidence of rinderpest infection be a continuing activity,
- a greater number of samples be collected from suspect cases of rinderpest for submission to national laboratories and the WRL. Every effort be made to collect and transport samples in such a manner that if infectious virus is present it is protected against inactivation during transport to the laboratory, and
- The WRL should provide the CIRAD-EMVT, Montpellier with representative samples of rinderpest virus.

### **3.8. EMPRES resource needs**

EMPRES has a critical role in supporting the GREP. Resources available to meet the tasks and objectives are inadequate both in manpower for developing early warning systems and in finance to support essential research.

The Expert Consultation recommended that an independent review be urgently undertaken of the resource needs for EMPRES to enable it to effectively meet its mandate and given the critical role of EMPRES in the GREP, every effort be made by FAO to secure the required resources.

### **3.9. EMPRES Expert Consultation of 1998**

The Expert Consultation recommended that the Consultation in 1998 should concentrate exclusively on reviewing world wide progress of the GREP.

## 4. PROCEEDINGS

### 4.1. Developing the EMPRES programme

#### 4.1.1. *Follow up to the World Food Summit Commitment*

The overall implications of the Declaration on World Food Security made at the World Food Summit, in November 1996, were examined in relation to EMPRES. The impact of rinderpest and other epidemic diseases upon development were discussed by the Expert Consultation as they influence both food security and trade. The diseases contribute to the instability of food supplies and to natural disasters in semi-arid pastoral areas, where livestock systems provide the major food component. The security of this food source could be assured by a more vigorous application of the EMPRES principles at country level

#### 4.1.2. *Impact of epidemic diseases on food security and trade*

Outbreaks of the transboundary epidemic diseases have a negative influence on both food security and trade. They do this by causing direct and indirect losses of livestock and by inhibitory effects of these diseases on trade. The Expert Consultation considered that the extension of EMPRES activities to regional and national levels would have a positive effect upon disease control and eradication activities. The EMPRES initiative is a key programme which addresses these issues and its role is more closely examined in a concept paper (see appendix 5.).

The need to assess the risk of epidemic diseases to trade among countries was highlighted. Clearly risks of introducing disease from one country to another arise from trading and the possibility of this occurring must be reduced to a minimum. A systematic risk assessment approach needs to be adopted in livestock trading. The Expert Consultation considered these issues and identified particular problem areas for the developing countries. Structural adjustment has frequently dismantled the infrastructures responsible for the minimisation of the risks involved in trading. As a result, many countries are now unable to meet the international standards for trade designed to prevent the importation of epidemic disease.

The development of the systems for monitoring and surveillance necessary to prevent such incidents were considered by the Expert Consultation an integral part of FAO-EMPRES activities and the reason why implementation is needed. For this to happen a more direct association is required between FAO-EMPRES and the countries involved. The development of a regional presence to facilitate implementation, and the adoption of EMPRES principles at country level, are essential if incidents such as the FMD outbreak in Taiwan are to be prevented.

#### 4.1.3. *The EMPRES global network*

EMPRES activities will involve FAO member countries, regional structures and international agencies and organisations such as OIE and WHO. Examples of regional institutions are the Pan American Health Organisation (PAHO) and the Organisation of African Unity (OAU). Reference laboratories and collaborating centres are crucial to the successful operation of the GREP and other co-ordinated control programmes. They provide confirmatory diagnosis and analyse and map the viral genome to assist in the epidemiological evaluation of transmission patterns. They have facilitated research for the development and evaluation of pen-side diagnostic tests for rinderpest virus. The FAO/IAEA Joint Division assists member countries and GREP and FMD control programmes by standardising, validating and assisting in the quality control of vaccination programmes and surveys. The Expert Consultation examined problems which had arisen in collaborative activities and has made recommendations regarding these.

#### 4.1.4. EMPRES transboundary animal disease information system

Official information announces what a country declares, but gives no indication of epidemiological features nor of what the country does not officially declare. It is strongly trade oriented.

The Expert Consultation defined the role, function and activity of the EMPRES information system. Information systems should assist in problem resolution and provide support for better and faster decision making. In contrast to only collecting and collating data, information systems should provide the analysis and presentation of information to provide rapid additional insight into a problem for rapid reaction.

The database concept which includes e-mail connections to regional and country contact points with Access input files, Arcview GIS, and Access output report files was considered technically sound. However, at this stage it did not provide detail beyond the headquarters.

The Expert Consultation defined the relative roles of EMPRES, the regional structures and the countries within the information system. The role for FAO was to verify and validate information provided by countries, to identify spatial and temporal patterns of disease, to warn countries of potential adverse developments and to assess the effectiveness of field surveillance.

The information system would focus on the GREP, with a similar design for all countries in the programme. The system would need to be capable of adding other EMPRES diseases when required. It was estimated that 4-6 years would be required to achieve the following objectives suggested by the expert consultation;

- develop work plans to establish objectives, design database schema and structure, decide on critical points (e.g. case/outbreak definition, geo-coding format) and develop reports and maps for country use and to publish in the bulletin,
- standardise and facilitate the reporting of performance indicators of surveillance from country to regional level to enable comparative analysis of performance over time and between countries (it was suggested that this be conducted firstly in conjunction with the PARC regional epidemiologist with a few pilot countries in Africa and with India). Once the national liaison units are operational, EMPRES headquarters should audit their effectiveness, and assist in the improvement, of field surveillance. The emphasis for the countries on the OIE Pathway will be on information to assist with rapid responses to emergencies,
- analyse remote sensing satellite data (e.g. cold cloud density (CCD), normal differentiated vegetation index (NDVI)), animal movement, wildlife populations and indirect and 'surrogate' indicators of spread, using GIS for patterns with which to predict the potential spread of rinderpest. The output of these analyses could be in the form of contour maps of risk of outbreaks of disease (it was suggested that this be developed for the Afghanistan-Pakistan region),
- accumulate and analyse the evidence (disease occurrence, case-related epidemiological data) of past outbreaks. Make comparisons between outbreaks to develop predictions and strategies for management of new outbreaks. The historical data in FAO's rinderpest occurrence file should be summarised and indices of incidence with time and area be developed, and
- develop GIS and analytical skills within EMPRES headquarters unit. The production and distribution of pictorial displays using GIS will maintain enthusiasm while developing experience.

#### *4.1.5. Objectives of EMPRES at the national level*

The Expert Consultation was presented with the proposal to establish national EMPRES Units in 'clusters' of countries where the risk of transboundary diseases, particularly rinderpest, is high. The principle was developed to select clusters of three to five countries. The approach to the countries by FAO to adopt EMPRES principles for epidemic diseases, was to be made at a ministerial level. The Chief Veterinary Officer would be asked to assign a senior officer to lead a national EMPRES Unit. The consultation endorsed the contents of the concept paper which gives details of the establishment and operational activities of national EMPRES Units (see Appendix 5.).

The promotion of EMPRES in these countries will improve their capacity to contain and control diseases like rinderpest. A regional EMPRES presence could provide assistance for early warning and rapid reaction to disease emergencies. Contingency planning, improving communication networks and surveillance would be high priorities. The Expert Consultation prioritised the 'cluster' groupings of countries to be targeted in the first and second phases of development (see Tables 1. and 2. in Appendix 6.).

#### *4.1.6. EMPRES functions at the global level*

The EMPRES functions at the global level were considered by the Expert Consultation to be those associated with the co-ordination and harmonisation of the national and regional activities in pursuit of the final goal of the GREP. EMPRES is involved in the quality assurance of vaccine used in the GREP by its association with the Pan African Veterinary Vaccine Center (PANVAC). The FAO/IAEA Joint Division has standardised serological test systems and supports training in the conduct of field surveys to assess vaccination coverage. EMPRES collaborates with regional organisations such as PARC in their rinderpest eradication programmes and with donors such as the EU and IFAD.

An important function of EMPRES at headquarters has been to develop a Global Early Warning System (GEWS) for the transboundary diseases. The consultation discussed the steps for development and indicated that a time scale of up to 6 years would be realistic for implementation.

EMPRES has been active in assisting countries to meet the emergency situations which they have faced following outbreaks of rinderpest or other epidemic disease. This assistance, provided through the Technical Co-operation Programme (TCP), enables national governments to meet the problems presented by disease emergencies. The Expert Consultation was concerned at the apparent lack of early reaction in many of the countries which have suffered recent outbreaks of epidemic diseases. They strongly supported the promotion of EMPRES principles at the country level.

#### *4.1.7. EMPRES functions at the regional level*

The Expert Consultation supported proposals to establish a regional presence for EMPRES. Pilot 'clusters' of countries were defined in areas of the world where current foci of rinderpest were present and the phases of development were prioritised (see Table 1. in Appendix 6.). These clusters of 3-5 countries were selected on the following criteria;

- the role of the livestock production systems in the agricultural economy and food security,
- the interest among local, national and regional stake-holders to combat and prevent epidemic diseases,
- the socio-economic impact of transboundary diseases,

- the epidemiological situation in adjacent countries based upon epidemic risk and ecosystem,
- the technical feasibility to reduce and contain the disease problem,
- where there are existing regional organisations that can facilitate implementation.

The 'clusters' would co-operate with existing regional organisations such as OAU, ASEAN and SAARC. The regional EMPRES officers should concentrate initially upon the GREP activities. Their appointment was considered critical to the success of the national EMPRES programmes as they would facilitate the development of the capacity for early warning, reaction and emergency preparedness within the countries of the region. They would have co-ordinating and training roles and would promote the development of improved communication networks within and between the countries involved.

#### 4.1.8. *EMPRES functions at the national level*

The Expert Consultation supported the development of a national EMPRES presence. A 'cluster' approach to the definition of countries for first phase of implementation was endorsed. Recommended priority activities were the establishment of a National Animal Disease Emergency Committee and the inclusion of disease emergencies in the country's Natural Disaster planning. EMPRES would also seek to improve communication networks in country by the use of e-mail and develop and test detailed contingency plans for disease emergencies. The national EMPRES unit would collaborate closely with the regional EMPRES office. The operational activities of the national units will be described in detail in a separate publication of the Guidelines paper presented at this Expert Consultation.

#### 4.1.9. *The role of the farming communities in EMPRES functions*

The Expert Consultation discussed the collaborative role of livestock owners, co-operatives, community based animal health workers, NGOs and other extension workers in EMPRES activities. All these groups have a role in the improvement of emergency preparedness within a country. Promoting the awareness of disease recognition, impact and control, together with clearly defined lines of communication to animal health staff could greatly improve disease reporting. This is especially the case in countries where structural adjustment changes have resulted in a decreased number of personnel and decentralised responsibility in the veterinary services. The outreach could be achieved by targeting the training at those with the most contact with livestock using visual training aids.

#### 4.1.10. *Developing EMPRES units within national veterinary services*

The detailed guidelines for the development of the national EMPRES units within the national veterinary services were not discussed by the expert consultation. However, support for the overall principles for their activities were clearly emphasised in their deliberations. A recommendation was made to encourage much wider publicity both nationally and internationally for EMPRES.

The major requirement was for improved communication facilities using e-mail and Internet connections together with the necessary hardware and software. These would be used in training activities at all levels for the improvement of the recognition of the serious transboundary diseases. The establishment of disease emergency committees and the development of contingency plans were considered essential. The national EMPRES unit was also charged with improving the surveillance systems for rinderpest in support of GREP. These would also be critically important once a declaration of freedom from disease was made. National EMPRES activities would be focused on improved early warning, reaction and emergency preparedness against transboundary diseases.

#### 4.1.11. *Donor support to national and regional EMPRES initiatives*

A suggestion was made that national EMPRES funding might in part be obtained by making it a component of debt relief. The Expert Consultation proposed that FAO bring this possibility to the notice of the World Bank, IFAD and the IMF. A further suggestion was made by the FAO ADG, Dr Sawadogo, that NGOs be made aware of the goal of GREP which is the major thrust of EMPRES at all levels. This is a high profile programme co-ordinating the eradication of the worst animal plague known to man. It was felt that many NGOs might wish to become associated with the eradication programme. The possibility of recruiting their assistance in establishing both regional and national EMPRES presence should be explored.

### 4.2. **Developing the GREP**

#### 4.2.1. *The Blueprint for Africa: progress towards eradication*

The GREP Blueprint developed for the Expert Consultation of 1996 was reviewed. In west Africa, Gambia—which declared provisional freedom in 1993—has not requested the recognition of its rinderpest disease-free status as was hoped would happen in January, 1997. However, there was no reported deterioration in its rinderpest-free situation. Côte d'Ivoire, Senegal, Togo, and Guinea have all made provisional declarations of freedom from rinderpest and are thus adhering to the Blueprint. On the other hand—Mauritania, Mali, Burkina Faso, Ghana, and Benin—are all behind schedule. It is not certain whether Niger and Nigeria will make their anticipated provisional declaration at the end of 1997.

In central Africa, only Chad and the Central African Republic are now included within the sanitary cordon. Thus, each of the remaining territories—namely Cameroon, Gabon, Congo, and Zaire—have fallen behind schedule, although there appears to be no technical reason why this should be so.

In eastern Africa, there has been a deterioration in the situation since July 1996 when the Blueprint was prepared. Rinderpest, which was detected in southern Kenya in late 1996, spread to the contiguous areas of northern Tanzania—a country which had not reported the disease for 14 years. Emergency action by the Kenya and Tanzania seems to have contained the epidemic. Disease continues to occur in southern Sudan with consequent high risks for northern Uganda, north-western Kenya and south-western Ethiopia. The situation in Somalia is at present unclear with cattle in the southern part possibly infected.

Djibouti, Eritrea, Rwanda and Burundi are most likely free from rinderpest. There has been no report of any rinderpest outbreak from Uganda since 1994. However, in response to developments in the countries on its northern and eastern borders, Uganda expressed a wish to vaccinate the whole of its cattle population. It was advised by FAO to restrict this to the high risk areas of northern Uganda. Rwanda also expressed a desire for complete vaccination.

According to the Blueprint schedule, Tanzania, which vaccinated during 1997, Burundi, Rwanda, Eritrea and Djibouti all should have declared themselves provisionally rinderpest free at the start of 1997, but failed to do so. There is no solution in sight for the complete elimination of infection from southern Sudan where, according to the Blueprint, all outbreaks should end by the close of 1998. On a more encouraging note, Egypt has declared provisional freedom from rinderpest and has stopped vaccinating. A steadily improving situation in Ethiopia offers the chance of a provisional declaration there in the near future.

#### 4.2.2. *The Blueprint for Asia: progress towards eradication*

In the South Asian group of countries, there is evidence to suggest that all of Sri Lanka is free of rinderpest and it is hoped that a declaration of provisional freedom will be forthcoming

during 1997. In India, which adopted a zoning policy from the outset, it appears that the OIE may be requested to recognise the northern (A and B) and islands (D) zones as disease-free towards the end of 1997 although some areas continue with vaccination. Furthermore, southern India (zone C), although currently still vaccinating, appears likely to meet the conditions for a declaration of provisional freedom from rinderpest in the near future.

Bangladesh, Myanmar and Nepal have all experienced a long enough period without clinical rinderpest for each of them to be able to make a provisional declaration. They have not done so and all three (3) are falling behind the Blueprint schedule. Bhutan is currently eligible to request recognition as a rinderpest-free country but has failed to do so. Pakistan still harbours rinderpest virus and appears unlikely to be able to reduce the number of rinderpest outbreaks to zero by the end of 1998. This will seriously jeopardise its progress towards freedom by the year 2005. The situation in and events and timetables for Afghanistan are intimately linked with those of Pakistan.

In West Asia, Iran regards itself as being rinderpest-free. However, it continues to vaccinate in view of the threatening situation in Pakistan and Afghanistan and, therefore, was not in a position to declare provisional freedom as required by the Blueprint in January, 1997. Rinderpest appears to have died out of northern Iraq in the 1994/95 winter but, in the absence of an empowered veterinary authority, no advantage can be taken of the favourable situation in this zone. There is limited disease intelligence from southern Iraq—the information available suggests freedom from disease—but they are still vaccinating. The Blueprint timetable anticipates that after January, 1998 Iraq will have had more than two (2) outbreak-free years. The national disease reporting system must be good enough to accurately determine the field situation, and there is no certainty that this is the case.

Turkey has stated an intention to create an eastern and western zone for declaration purposes, but has not yet done so through a communication to the OIE. No outbreaks have been seen since early 1996 and it is intended that the western zone will declare provisional freedom at the end of 1997. The eastern zone will be maintained as a vaccinated zone for the immediate future. The Blueprint called for Syria, Lebanon, Jordan, Israel, Saudi Arabia, Kuwait, Bahrain, Qatar and Yemen to declare provisional freedom from rinderpest at the beginning of 1997. At present, only Jordan and Lebanon intend to follow the OIE Pathway by making such a declaration at the end of 1997. Worse still, there is persistent rinderpest infection in both Saudi Arabia and Yemen. Possibly the United Arab Emirates and Oman were both rinderpest-free during 1996 and, if the situation remains unchanged during 1997, they will be able to make provisional declarations ahead of schedule at the start of 1998.

In Central Asia, it was hoped that Turkmenistan, Tajikistan, Kyrgyzstan, Uzbekistan, Kazakhstan, Russia, Mongolia and China would all join the OIE Pathway in January, 1997 by declaring provisional freedom from rinderpest. This has not happened and it is unlikely they will do so without more effective contact between these countries and the co-ordinating structures of GREP, such as EMPRES. Indeed, all countries in GREP require a much higher level of counselling, and at a higher level of government, than is currently achievable with the available resources.

#### *4.2.3. When to stop vaccinating*

If global rinderpest eradication is to be achieved by 2005, it is essential for all countries to fulfil all conditions imposed by the OIE Pathway. The principal objective of this Pathway is the production of verifiable evidence that no endemic focus of rinderpest remains within any of the countries previously known to have been infected. The OIE Pathway is the only route

by which to obtain an internationally recognised status as a rinderpest-free country for the purposes of trade.

The use of attenuated rinderpest vaccine will mask serological evidence of the absence of infection. Therefore, it is only possible for a country to move onto the Pathway if it is prepared to stop vaccinating. Furthermore, it is only possible for a country to remain on the Pathway provided it is prepared to avoid further use of this vaccine. It follows therefore, that the sooner a country wishing to prove itself free of rinderpest stops vaccinating, the more rapidly will it achieve its objective. In order to stand a reasonable chance of being successful, it is a requirement of the Pathway that, before stopping vaccination against rinderpest, it must have reduced the number of outbreaks to zero and have maintained this situation for twenty four (24) consecutive months. The widespread use of vaccine throughout the bovine population will obtain this reduction, but the point at which it has been successful is the point at which its use should be ended. Vaccination campaigns should not be institutionalised.

#### *4.2.4. How to stop vaccinating*

The most important criterion by which to determine the time at which vaccination can cease, is the total absence of disease for two years. The most difficult task facing the senior administrators responsible for deciding when to stop vaccinating, is to know that the lack of outbreak reports truly represents absence of infection. The disease reporting system must therefore be evaluated as a key issue in the process of abandoning vaccination. In theory, the incidence of outbreaks will have been driven to extinction by the massive application of vaccine and so a demonstration of high immunity levels in the cattle populations can assist in making the necessary decision. In practice, a variety of factors including zoosanitary controls are involved in reducing the number of outbreaks. It follows then, that even if sero-monitoring results are incomplete or are lower than required to immuno-sterilise a population, a decision can be made based on accurate outbreak returns.

#### *4.2.5. How to validate a rinderpest disease-free status when vaccination ends*

Rinderpest generally discloses its presence by causing overt clinical disease. On the other hand, so called 'low profile' strains have been encountered which do not give rise to dramatic outbreaks of disease and which can remain masked within a population except in times of inter-current stress. Accordingly, the absence of rinderpest from a population of livestock should be determined by active disease surveillance for outbreaks of clinically apparent disease. It is estimated that if no outbreaks are detected for three years, then the chances of rinderpest persisting within a population would be negligible. It cannot be guaranteed that the virulence of the 'low profile' strains found in eastern Africa would increase in an unvaccinated population to show obvious disease. In such circumstances, the infection could remain cryptic for long inter-epidemic periods (the technique for resolving this problem is mentioned below).

Standard methods exist to determine the minimum number of livestock units that must be examined to confirm the absence of rinderpest. However, there is no upper limit to the sample size that may be examined if a veterinary service is enthusiastic and wishes to advertise its strength and level of competence.

#### *4.2.6. How to validate a rinderpest infection-free status when vaccination ends*

Animals that have been infected with either classical or 'low profile' strains of rinderpest develop a specific immune response which is long-lived and can be measured by a variety of serological techniques. The competition ELISA test is currently recognised as the technique of choice. This test has been standardised and validated. Demonstrating the absence of

rinderpest antibodies in an unvaccinated population, assures the non-existence, at the period in time during which the survey was conducted, of both classical and 'low profile' strains. For a country to be declared 'free of rinderpest infection', it must mount a two-year sero-surveillance programme in conjunction with a three-year disease surveillance programme. Standard techniques have been developed for defining survey sampling techniques and programmes. To minimise the time from 'declaration of provisional freedom' to 'freedom from infection', sero-surveillance will need to commence at the end of the second year after cessation of vaccination.

#### *4.2.7. Performance indicators*

The success of all stages of the eradication process should be carefully evaluated using a variety of performance indicators. Such indicators will offer a quantifiable measure of whether or not achievements are real and on target. They may be combined with diagnostic indicators which will offer an explanation of why achievement levels are below target. Performance indicators should not be confused with workload or other indicators.

#### *4.2.8. Emergency preparedness*

A comprehensive set of guidelines has been developed for African countries and will be published in a separate document.

#### *4.2.9. Risk analysis*

The period of greatest need for risk assessment is during the change from a vaccination policy to one of purposive surveillance. Risk is not easy to quantify after abandoning the use of rinderpest vaccine, because socio-economic and political factors become of greater importance as well as the biological factors. However, risk factors which should be examined include the likelihood of pockets of infection in domestic or wildlife populations, livestock movements into the country and the existence of rinderpest in one or more neighbouring countries.

Risk management strategies should be devised to protect against re-infection by implementing emergency preparedness concepts before an emergency arises. Risk communication must be undertaken by ensuring that all involved sections of the community, including members of the livestock health service and stock owners understand that a new strategy is being followed and that rapid communication of occurrences will greatly reduce the risk of further spread.

#### *4.2.10. Sanitary Cordons*

A sanitary cordon is a belt of two zones—a buffer zone and a surveillance zone—separating a rinderpest infected area from a rinderpest free area. Cattle may move into the first belt of the buffer zone which consists of a tract of land, in which potentially rinderpest infected livestock must remain for 21 days—the longest possible incubation period for rinderpest. Animals entering such a zone must be under veterinary supervision. The resident cattle in this zone should be immunised at all times to prevent the occurrence of any secondary outbreaks, should the transiting animals develop rinderpest. The second belt of the sanitary cordon—the surveillance zone—is a similar zone in which cattle are not vaccinated, but in which a high level of surveillance for clinical disease is maintained. This is bordered by the rinderpest free zone.

## **APPENDIX 1**

### **AGENDA FOR THE EXPERT CONSULTATION**

## Agenda for the Expert Consultation

Chairman: Dr A. Donaldson  
Rapporteurs: Dr W. Taylor and Dr G. Davies

**Session 1. - Monday, 14 July, 1997**

### EMPRES THEMATIC ISSUES

0900 - 0915	Welcome	Dr T. Fujita
0915 - 0945	Report of the year's EMPRES activities	Dr M. Rweyemamu
0945 - 1000	Chairman's remarks - expected outputs from the consultation,	Dr A. Donaldson
1000 - 1030	Break	
1030 - 1110	Implications for the EMPRES programme of the Rome declaration on World Food Security and the World Food Summit Plan of Action.	Discussion led by Dr C. Grocock
1110 - 1150	EMPRES disease database management TADINFO	Discussion led by Dr R. Morris
1150 - 1230	Towards developing EMPRES-Livestock at national level	Introductory remarks by Dr G. Davies
1230 - 1400	Financial arrangements and lunch break	
1400 - 1530	Towards developing EMPRES-Livestock at the national level	Discussion led by the Chair
1530 - 1600	Break	
1600 - 1700	Towards developing EMPRES-Livestock at the national level (continued)	Discussion led by the Chair
1800	Cocktail reception	

## Session 2. Tuesday, 15 July, 1997

## THE GLOBAL RINDERPEST ERADICATION PROGRAMME

0830-0915	The GREP Blueprint for Africa-progress towards eradication in west, central and eastern Africa	Dr W. Masiga
0915-1000	The GREP Blueprint for Asia-progress towards eradication in south, central and west Asia	Dr P. Roeder
1000-1030	Break	
1030-1230	Guidelines on managing the transition from vaccination to verified and sustainable freedom from rinderpest	Introduction Dr W. Taylor Discussion led by the Chair
1230-1400	Lunch break	
1400-1500	Guidelines on emergency preparedness and contingency planning	Discussion led by the Chair
1500-1530	Break	
1530-1730	Guidelines for rinderpest diagnosis and surveillance	Discussion led by The Chair

## Session 3, Wednesday, 16 July, 1997

## THE GLOBAL RINDERPEST ERADICATION PROGRAMME

0830-1000	Recommendations for amending the OIE Pathway and OIE Animal Health Code rinderpest chapter	Discussion led by the Chair
1000-1030	Break	
1030-1130	OIE Pathway continued	Discussion led by the Chair
1130-1230	Recommendation for EMPRES Thematic Issues	Discussion led by the Chair
1230-1400	Break	
1400-1530	Recommendations for GREP Issues	Discussion led by the Chair
1530-1600	Break	
1600-1630	Possible theme for the 1998 Technical Consultation	Discussion led by Dr J. Domenech
1630-1700	Report of meeting and recommendations to the FAO ADG, Dr A. Sawadogo	presenter Dr C. Groocock.
1700	Closure of consultation	Dr A. Sawadogo, ADG

## **APPENDIX 2**

### **REPORT ON THE IMPLEMENTATION OF THE RECOMMENDATIONS OF THE 1996 EMPRES–LIVESTOCK EXPERT CONSULTATION**

## REPORT ON THE IMPLEMENTATION OF THE RECOMMENDATIONS OF THE 1996 EMPRES–LIVESTOCK EXPERT CONSULTATION

### 1. In respect to rinderpest

- ◆ The threat of rinderpest to world food security should be drawn to the attention of the World Food Summit and that this body be requested to set global rinderpest eradication as one of its goals:
  - ⇒ The World Food Summit Plan of Action, states:
    - " Seek to ensure effective prevention and progressive control of plant and animal pests and diseases, including especially those which are of transboundary nature, such as rinderpest, cattle tick, foot-and-mouth disease and desert locust, where outbreaks can cause major food shortages, destabilise markets and trigger trade measures; and promote concurrently, regional collaboration in plant pests and animal diseases control and widespread development and use of integrated pest management practices."
- ◆ The blueprint for global eradication of rinderpest by 2010 be adopted and drawn to the attention of all FAO member countries:
  - ⇒ Submitted to all Chief Veterinary Officers of Member States in Africa, South Asia, West Asia and Central Asia.
  - ⇒ GREP activities have had a high profile coverage in the Press (radio and newspapers) particularly in Africa.
- ◆ An outbreak of rinderpest outside the endemic areas identified in July 1996 is to be considered an international emergency:
  - ⇒ One week after the World Food Summit (Nov. 25, 1996), Tanzanian Minister of Agriculture, having been informed by Kenya of (at the time) suspected rinderpest in Nairobi National Park, appealed to the Director-General, FAO, for assistance for preventive action, and notified the local EC Delegation and the OAU/IBAR. Two days later the rinderpest diagnosis was confirmed by the FAO Regional Reference Laboratory at Muguga and the Kenyan CVO notified the OIE).
  - ⇒ FAO-EMPRES and OAU/IBAR convened an emergency meeting during the first week of December and set up joint field investigations by the Kenyan and Tanzanian veterinary and wildlife teams. The conclusion was that the risk for rinderpest spread to Tanzania was high.
  - ⇒ Emergency action was taken by each country based on unprecedented emergency subventions by their own national treasuries. These were supplemented by emergency financial and technical support by FAO, EU and UNDP with the technical co-ordination by the OAU/IBAR.
  - ⇒ On 9 February 1997, FAO appealed for concerted national and international action to prevent the outbreak from evolving into a catastrophe, particularly as there was a period the drought.
  - ⇒ Surveillance and control activities have been sustained constantly since November. All available evidence suggests that the spread of disease has been checked. Credit is

due to the veterinary authorities in Kenya and Tanzania plus the collaboration of OAU/IBAR, PARC project financed by the EU.

- ◆ EMPRES should endeavour as a matter of urgency to have appropriate regional rinderpest co-ordination unit(s) established to cover west and Central Asia.

⇒ For Africa there has been a re-affirmation of commitment to rinderpest eradication by the national veterinary services, the principal donor to PARC and the regional organisation responsible for GREP co-ordination in Africa, i.e. OAU/IBAR. Nevertheless, there are still some serious deficiencies in the financial arrangements which are essential to ensure sustained action for irreversible eradication.

⇒ West and central Africa as well as Egypt have recorded no cases of rinderpest for up to 10 years. Egypt and several west African countries have now declared their provisional freedom from rinderpest. However, rinderpest persists in parts of Eastern Africa. Recently, the disease has occurred in southern Kenya whence it has extended into the contiguous parts of northern Tanzania.

⇒ In Asia, India has made a remarkable achievement. For the first time the whole of India has been without rinderpest for more than one year. The Northern States were declared to the OIE as provisionally free from rinderpest in 1995 and there has been no rinderpest outbreak recorded in the whole of India since September 1995. Similarly there has been no rinderpest in Bangladesh, Bhutan, Nepal and Sri Lanka. They all fulfil the condition for entering the OIE Pathway. However, rinderpest continues to be widespread in Pakistan with extensions into Afghanistan. A rinderpest control programme in Pakistan and Afghanistan is most urgently needed. National Projects are either in place or about to start in Bhutan, Bangladesh, Nepal, India and Sri Lanka. The SAREC-support regional project is also expected to become operational at the beginning of 1998.

- ◆ FAO should liaise with OIE to establish verification procedures for regional and global rinderpest freedom.

⇒ The annual FAO/OIE/WHO Co-ordination meeting has accepted this recommendation. The OIE FMD and Other Epizootics Commission has requested FAO to provide recommendations; the details are to be debated by the present meeting of the EMPRES-Livestock Expert Consultation.

## **2. In respect to PPR**

- ◆ It would be inappropriate to initiate PPR eradication programmes at present,
- ◆ EMPRES should urgently facilitate the validation and licensing of PPR vaccine, and
- ◆ EMPRES should facilitate studies to determine the current epidemiological situation for PPR and to develop appropriate control and eradication strategies for future use.

⇒ Collaboration with the CIRAD-EMVT has resulted in the transfer of the PPR seed vaccine virus to PANVAC for further dissemination to vaccine producers in Africa. Also a technology collaboration arrangement has been agreed between CIRAD-EMVT and PANVAC.

### 3. In respect to FMD

- ◆ EMPRES should not seek to develop its own programme for the global eradication of FMD,
- ◆ EMPRES should wherever possible and within the constraints of its available resources respond to requests to promote and assist national and regional FMD control and eradication programmes,
- ◆ EMPRES should play a catalytic role in the provision of early reaction support when outbreaks of FMD occur in strategically important regions. Central Asia is seen as one such region, and
- ◆ EMPRES should express its concern to OIE about the slow progress being made in the formulation of an epidemiologically sound pathway for declaration of freedom from FMD disease and infection.
  - ⇒ Collaboration with the OIE and IAEA for initiating co-ordinated FMD control in South-East Asia is underway. A national FMD project for the Philippines with financing by Australia has been set up. A technical assessment mission has just completed a study of Cambodia, Laos and Vietnam, the outcome of which is to be discussed at the regional workshop in Hanoi at the end of July.
  - ⇒ A similar study has just been concluded for Kenya and Uganda. This study has been undertaken with the collaboration of OAU/IBAR and financial assistance by the UK Department of International Co-operation.

### 4. In respect to CBPP

- ◆ EMPRES should provide assistance in making validated vaccine seed stocks for CBPP vaccine available to countries,
- ◆ EMPRES should develop a control and eradication policy for newly infected areas,
- ◆ EMPRES should co-ordinate and facilitate the establishment of the two sanitary cordons (eastern and western zones) in Africa,
- ◆ EMPRES should catalyse research into defined aspects of the pathogenesis, immunity and mechanisms of resistance to CBPP, diagnosis; microbiology; vaccines and the role of chemotherapy,
- ◆ Monovalent CBPP vaccines should be used in west Africa,
- ◆ EMPRES should pursue the strategies for CBPP control and eradication for eastern and southern Africa outlined in its concept paper of November 1995 on this subject, and
- ◆ EMPRES should collaborate with OAU/IBAR to develop CBPP control and eradication strategies for west and central Africa and the Horn of Africa.
  - ⇒ The T1-SR vaccine seed strain has been withdrawn and replaced by the T1/44 strain jointly produced and certified by CIRAD-EMVT and PANVAC. The Joint FAO/IAEA Division is proceeding with the launching of the standardised ELISA test. EMPRES is collaborating with the OAU/IBAR, SADC and the EC in developing a CBPP control strategy for southern and eastern Africa. The situation of CBPP in southern Africa has deteriorated with the recent invasion of Zambia, the continuing unchecked disease status in Angola and the lack of sustained donor support for national CBPP control in Tanzania

## 5. In respect to Rift Valley fever

- EMPRES should promote research into ecological factors that could provide a predictive capacity for epidemics of diseases such as RVF as well as other insect borne livestock diseases capable of causing widespread epidemics, and
- EMPRES should identify appropriate vaccines for RVF, probably inactivated, and promote investigations into the long term storage of antigens as a vaccine bank. Alternatively EMPRES should identify vaccine manufacturers of high quality RVF vaccine and explore the possibility of contractual arrangements with them for guaranteed supply of vaccines in an emergency.

⇒ A ground study on the inter-epidemic status is underway in west Africa, co-ordinated by the LNERV Laboratory, Dakar. A suspicion of Rift Valley fever in India was investigated and shown to be false. No steps have been taken for establishing any vaccine bank.

## 6. In respect to EMPRES early warning and early reaction systems

- EMPRES should promote the adoption of the principles of emergency preparedness through early warning and early reaction and establish without delay the proposed regional EMPRES units; the proposed Global Early Warning System element should be established rapidly with special attention being paid to rinderpest.

⇒ Efforts are under way to develop the transboundary disease information system.

⇒ Also a decision support software is under development for harmonisation of early warning-reaction systems (EWS).

⇒ Rinderpest surveillance in Tropical Africa is to be conducted through the an EU-funded PARC Epidemiology project with the OAU/IBAR.

⇒ In 29 countries of the Middle East, North Africa and the Horn of Africa, an IFAD funded project (RADISCON) is setting up a surveillance network for epidemic disease for which the initial focus will be on rinderpest, FMD, PPR and brucellosis. A similar project is under development for the SADC countries.

⇒ The Joint FAO/IAEA Division is co-ordinating rinderpest sero-surveillance in the Middle East.

⇒ A multi-media software has been produced and distributed to Member Countries explaining the EMPRES Programme. CVOs have been invited to nominate National EMPRES Liaison Officers. E-mail connection is being established for about 40 countries in Africa and the Middle East.

⇒ A quarterly EMPRES bulletin has been launched.

⇒ EMPRES-Livestock is on the 'Web' and an EMPRES-Livestock electronic discussion Group is being launched this week.

⇒ An example of response to diseases requiring tactical early reaction attention is the work on African swine fever in Mozambique, Kenya and Côte d'Ivoire. The latest has been Côte d'Ivoire which became infected in April/May 1996. Here a determined early response by the Ivorian authorities, and the support through EMPRES and the TCP mechanism of FAO, has permitted the disease to be brought under control, albeit following the sacrifice of about 25% of the pig population of Côte d'Ivoire. Two regional workshops on ASF covering disease recognition, diagnosis, control strategies and concepts of emergency preparedness have been

conducted. Classical swine fever (hog cholera) in Haiti is another example which has demanded similar action.

⇒ FAO management has accepted the recommendation for strengthening the early warning aspect of EMPRES-Livestock. Accordingly, a new post at P3 is to be established from January 1998. Management has considered the P3 level to be more appropriate than the P5 level recommended by the Expert Consultation. Three reasons justify this decision: finance, a desire to attract a person early in their career evolution and the need to maintain the early warning element of EMPRES as highly interactive with external centres of excellence in terms of both collaborative action and attraction of visiting scientists. It is also hoped to strengthen this aspect with two Associate (Junior) Professional Officers at HQ and two more in the Regional Offices. So far, only the Regional Office for Latin America and the Caribbean in Santiago, Chile, has an animal health officer with primary responsibility for EMPRES activities.

## **8. Related Developments**

- ⇒ Two lecture presentations were delivered to the Permanent Representatives to FAO on the EMPRES Programme.
- ⇒ The Partnership programme for Visiting Scientists.
- ⇒ Extension of The Partnership programme to include Young Scientists.
- ⇒ The Special Programme for Food Security emphasises short-cycle livestock.
- ⇒ The Special Programme for Food Security is developing country-based, nationally-owned programmes.

### **APPENDIX 3**

#### **THE IMPLICATIONS FOR EMPRES OF THE ROME DECLARATION ON WORLD FOOD SECURITY AND THE WORLD FOOD SUMMIT PLAN OF ACTION**

### **THE IMPLICATIONS OF THE ROME DECLARATION ON WORLD FOOD SECURITY AND THE WORLD SUMMIT PLAN OF ACTION ON THE EMPRES CONCEPT AND ACTIVITIES**

The declaration on World Food Security clearly incorporates the concept of EMPRES and what it aims to achieve. Underlying the declaration is the ongoing effort to eradicate hunger in all countries. Certain statements can be abstracted that are directly pertinent to EMPRES and are as follows. Most of them are largely self evident. In the opening general statement of the Declaration the following points are made;

- A target has been set to reduce by 50% the number of undernourished people by the year 2015 and the emphasis is clearly on the developing countries,
- Compounding factors that lead to the present situation are the instability of food supplies as a result of natural and man made disasters,
- Poverty is a major cause of food insecurity and in many parts of the developing world the economic environment is closely tied with agriculture,
- The revitalisation of rural areas is needed to enhance social stability and reduce immigration into the urban areas,
- Individual governments have to develop an enabling environment for economic stability and to do this there must be co-operation,
- It is recognised that there is a need to adopt policies to promote research and infrastructure for achieving food security, and
- Particular attention should be paid to those who are affected by natural disasters and the urgent need to combat pests and diseases.

The plan of action further develops the core issues which are;

- Each nation must adopt a strategy consistent with its resources and capacities,
- Co-ordinated and shared responsibilities are essential,
- Food assistance is a short term solution and measures should be taken for more sustainable provision including appropriate technology,
- Farmers are crucial in achieving food security and their full involvement is vital for success,
- To reverse the trend towards urban migration and the resultant social instability,
- To sustain and improve national resources to feed a growing world population,
- Progress should be targeted on minimising the vulnerability to and impact of pests and diseases. Response to such disasters should be timely and effective,
- Sub Saharan Africa has particularly high levels of undernourished people and special efforts should be made at reducing this, and
- The international community has a key role in providing technical assistance in fostering food security.

The Commitments and Action expand on the themes for support for rural peoples and development in rural areas, the provision of inputs such as training, finance and appropriate technology and technology transfer to promote a sustainable food supply, in part by combating pests and disease. Commitment 3 particularly identifies pests and diseases of a transboundary nature such as rinderpest, cattle tick, foot and mouth disease and the desert locust.

The issues addressed above can be summarised. There is recognition by all Parties to the Declaration that there is world wide poverty and that there is a special need for stable food supplies in the developing countries. The main source of supplies is local agriculture which is dependent on the livelihood and economy in the rural areas. These are susceptible to many adverse factors and as a result, the countries are threatened by uncertainty of food supplies and consequent economic and social instability.

Livestock are a fundamental component of the developing country agriculture. It cannot be emphasised enough that livestock provide an indispensable high protein source of food in subsistence cultures, and a source of power and fertiliser. A 1974 study from Cornell University illustrated the impact that the introduction of dairy cows can have on human protein supplies. It indicated that a small farm of two hectares is assumed to yield about 61,000 megacalories (Meal) of metabolizable energy from the grain and plant residue. If the grain from one hectare and residue from both hectares is fed to cows the total energy available as human food falls by only 8.4% but the total protein available rises by 165%.

In developing countries there is a comparatively high economic return on the sale of milk and meat and the demand around the urban areas high. Even in nomadic societies the sale of livestock, meat and milk provide a major source of income, which promotes the local economy. Often this is in semi-arid ecological areas that do not support other types of traditional agriculture above subsistence level. One has only to visit the bustling little "bush" communities in many parts of East Africa to appreciate the busy commerce that is going on and to see the crowds of school children, most of whose school fees are paid for by locally generated family member income.

#### **FAO-EMPRES**

FAO-EMPRES has correctly identified the eradication of rinderpest as a primary objective. As it reiterates, rinderpest is an old Asiatic plague that repeatedly invaded Europe in medieval and later times and at the end of the 19th century ravaged cattle and ungulate wildlife throughout Africa. It is the most dread of all animal diseases because of its high mortality and thereby its impact on food security. The level of dread is reflected in the concept of the Four Horsemen of the Apocalypse—War, Plague, Famine and Death. The plague was rinderpest, associated with war and moving armies, famine and death followed. In modern time it is still true. The introduction of rinderpest into Africa was associated with a military campaign into Abyssinia, and the remaining endemic foci in Africa are in areas of civil strife, both on going and in recent past.

While rinderpest is the most dreaded, it is one of the more easily controlled diseases and, as experienced with programs like JP-15 in the 1960's in Africa and the Pan African Rinderpest Campaign (PARC) in the 1980's-90's, lends itself to eradication if programs are properly and consistently applied.

The Declaration identifies a special need in sub-Saharan Africa and the EMPRES emphasis on rinderpest eradication and on Contagious Bovine Pleuro-Pneumonia (CBPP) control clearly meets these needs. However the need is still world-wide.

## Situation in Europe.

There are two significant lessons to be learnt from present and recent events and, though the aim of EMPRES is largely directed at the developing world the consequences of catastrophic diseases can be seen in the developed world.

The present ongoing outbreak of classical swine fever in the Netherlands is a case in point. The Netherlands first reported the disease at the beginning of the year and, to date, it is not fully controlled. One quarter of the swine population, 3-4 million hogs, have been destroyed, either from disease or because of loss of markets; new born pigs, destined for future export, are piling up by the hundreds of thousands with nowhere to go. The economic losses are similarly enormous, close to \$1 billion, from both direct costs and the loss of exports to the rest of the EU and elsewhere. The Netherlands was a major live pig and pork exporter. The lesson, of which we are all aware, is that eradication and freedom from disease without vaccination creates, depending on the disease, a situation of extreme epidemic instability. If the disease is smouldering in neighbouring countries with different control strategies the recipe for disaster is in place. An identical situation exists with rinderpest between countries in Africa that have eradicated the disease and are now stopping vaccination while countries in east Africa, particularly Kenya, have persistent foci of the disease.

Last summer there was a fairly extensive outbreak of foot and mouth disease, Type A, in the Balkans, and also a more persistent Type O outbreak in Greece. In October a single Type O outbreak in Bulgaria occurred and more extensive outbreaks of Type O in the latter part of the year were reported from Turkey. The outbreak in the Balkans was controlled only by the timely intervention of the FAO European Commission for the Control of Foot and Mouth Disease (EUFMD) and EC financial assistance. After the ravages of years of internecine war, the countries of the former Republic of Yugoslavia, as they struggle to rebuild surely qualify as developing countries. Certainly much poverty exists.

At a Balkan Animal Health Workshop held in Macedonia under the auspices of USAID, the veterinary participants from nine countries in the Balkans and surrounding area quickly recognised the need to work regionally to prevent the incursion of FMD and to co-operate in its control when that became necessary. Considering the turbulent political history, this fledgling co-operation deserves much support not only to benefit animal husbandry in the area but also the threat FMD outbreaks pose to the unvaccinated livestock of the EU and Central Europe. The threat was realised in 1993 with outbreaks stemming, it is reported, from foci in the Balkans.

It is likely that outbreaks of FMD will sporadically occur in the future in SE Europe; many veterinary authorities in the area do not have the resources to police their borders, and it is widely recognised that much traffic in animals and animal products are transiting the area from collection points further east into the EU. This traffic is of great concern to Slovenia and Hungary, who fear that illegal collection points, accompanied by false certification, extend well into the former CIS countries and western Asia. An EMPRES FMD focus on the poorer countries of the Balkans, such as Bosnia, would not only help to alleviate the rural poverty there as the farmers rebuild their animal stocks with improved breeds, but also benefit the rest of Europe by minimising the risk of another CSF/Netherlands type of situation. The lesson is that there is advantage to the developed world in controlling and eradicating disease from the developing world.

## Trade

The Declaration pointed out the special needs of sub-Saharan Africa. In this respect it is interesting to look at the historical role education and health have played in the economic development of areas of the world. In the 1950s the former Zaire and some other countries in Africa were at the same income level as South Korea, but since then there has been an increasing dichotomy. Research into reasons has shown some surprising findings. In brief the formula was an outward-oriented market based economic policy coupled with an emphasis on education and health care. The Asian model is being adopted elsewhere, for example Chile in South America and at least four countries in Africa—Uganda, Angola, Lesotho and Malawi—enjoy economic growth rates of 10%.

As is stated frequently in the Declaration the key to alleviating poverty is the stimulation of economic growth of developing countries. Though perhaps a more distant goal than the task of food self sufficiency, the development of an agricultural export industry will contribute to such economic growth. No longer, however, will it be enough to produce excess. Though many factors have contributed to the current international agricultural trade environment, no single event has had more profound impact than the signing of the World Trade Organisation's Sanitary and Phytosanitary Agreement (WTO-SPS). Among the special provisions of the WTO-SPS Agreement are:

- the advantage of using international standards,
- regionalization, or
- the recognition of pest and disease free zones for trade purposes, and
- equivalency between respective national sanitary and phytosanitary measures.

## Regionalization

Under the provision of regionalization, countries are required to permit imports of animals and animal products from areas or zones considered to pose low disease or pest risk. Historically, entire countries have been considered free or not free of a certain disease agent; import and export protocols were developed accordingly. Most scientific and agricultural communities now view "zero" risk as arbitrary and incompatible with trade liberalisation. It is recognised that disease agents may not be evenly distributed across countries. One of the negative aspects of the "country by country" doctrine is that there is not an incentive to producers to improve their husbandry and animal health management practices. For effective regionalization to work the exporting country needs to have a credible infrastructure with reliable surveillance and monitoring systems.

## Standards

The establishment of import and export standards cannot be arbitrary. They must be scientifically based, transparent and defensible. The development of such standards requires a process of risk assessment which itself requires a uniform and internationally accepted approach. This is one of the major, contentious issues in international trade negotiations at the present time. While risk assessment gauges the level of danger in a particular situation the next step of risk management determines what steps need to be taken to reduce the risk to an acceptable level, steps such as defining conditions of entry, activating a monitoring system. The final, most important step, is risk communication or the open, two-way exchange of information and opinion about risk, that will lead to better and more effective measures on both sides.

There is clearly some way to go in these two-way discussions and there will be many challenges, advances and retreats, but it is only a question of time before the WTO-SPS principles are fully implemented. Countries with sound infrastructure and a demonstrated record of containing and controlling disease outbreaks will begin to benefit from a significant trade advantages and, of course, have access to hard currency earnings for agricultural commodities. These surveillance and monitoring systems will rapidly become a "value added" label to livestock products, because of providing known and documented valid information on the health, origin, and quality for each commodity.

The vision of EMPRES goes a long way as a catalyst to assisting changes that can lead to conformity with the WTO-SPS and future trade possibilities, economic growth and reduction in poverty. By attacking diseases that are recognised as destructive by all levels of society in the developing countries there is a wide acceptance of its aims. There is almost immediate political realisation that, to combat them, there has to be bilateral dialogues and, to control them, there has to be practical and effective international co-operation. This dialogue can and should be expanded for other animal health discussions and the establishment of regional forums to address other disease concerns. EMPRES insistence on inter-government co-operation for control of transboundary diseases should provide a starting point for wider co-operation in animal health disease control. Such interactions when seen to be mutually advantageous may lead to wider economic and even political co-operation.

With EMPRES inputs of technical expertise and training, information on international standards can be transferred for disease surveillance, monitoring and reporting. With inputs of financial help the veterinary structure will be improved. Two considerations should be addressed: Conditions similar to that imposed by the EC, and administered by PARC, where political support for national funding and improvement of the veterinary services is a condition of international assistance. This is crucial in order to maintain critical surveillance and monitoring capabilities after the eradication of rinderpest is achieved and the urgency diminished.

There is increasing discussion of debt relief for developing countries. A general condition of such concessions could be a commitment on the part of all the benefiting countries to invest and improve their national veterinary services to improve food supplies. A particular case should be made for countries combating transboundary diseases.

The system of surveillance and monitoring set up by EMPRES can be adapted to other diseases of trading concern leading to an established record of disease control.

A final consideration. One of the legacies of colonial rule in sub-Saharan has been the explosive growth of livestock populations as modern vaccine and drugs were wielded by efficient veterinary services and land cleared of tsetse fly opened to grazing. The net result has been the degradation of range-lands and contributed to the extensive negative impact on the environment. There has to be a strong emphasis on a holistic approach to disease control and eradication, with concomitant efforts towards social and cultural changes to livestock ownership. Creating specific disease-free animal populations that later crash as a result of drought or other natural disasters is not a recipe for sustainability and food sufficiency.

#### **Situation in Asia**

The different regions in Asia (Far East, South-East Asia, South Asia, Middle East) are at varying levels of political, economic and social development. This is also true of the different countries within a Region. Economically, it stretches from the industrialised and developed

nations such as Japan, South Korea, Taiwan and Singapore to the rest of Asia that is at different levels of development. As a Regional entity, the Association of South East Asian Nations (ASEAN), is perhaps more cohesive. With the impending entry of Myanmar, Laos and Cambodia, ASEAN will consist of 10 nations in South-East Asia. Even within ASEAN there are wide differences in political, economic and social policies. This is especially so in matters related to agriculture and in particular to veterinary infrastructure, regulatory mechanisms, laboratory facilities and preparedness *vis a vis* livestock disease control.

Of the six named transboundary livestock diseases under the EMPRES Programme, FMD is the most important or perhaps the only disease that matters as far as South-East Asia and ASEAN are concerned. In South Asia and the Middle East, in addition to FMD, rinderpest, PPR, and CBPP are the transboundary diseases of importance.

The World Food Summit Plan of Action, under the Third Commitment seeks to ensure effective prevention and progressive control of plant and animal pests and diseases, especially those of transboundary nature. This is seen as important as these diseases can cause major food shortages, destabilise markets and trigger trade measures. Although this is true for countries with a developed and flourishing livestock industry, the negative effects of transboundary diseases are only now being recognised by most countries in Asia. This is because of the largely subsistence-level and extensive livestock farming practised in these countries.

Transboundary diseases were not seen as a constraint to livestock and livestock product trade in the past. It is with the large-scale introduction and development of intensive, commercial livestock management systems that disease becomes a major constraint and it is only when importing countries demand disease-free livestock and livestock products that transboundary diseases become major obstacles to trade. In many Asian countries today these changes in the livestock farming practices have and are taking place with the consequent recognition by both livestock farmers and government of the importance of economically important and public health significant livestock diseases.

Thus there is an awareness and commitment to prevent the entry and spread of infectious diseases and to speedily control and eradicate them. This change in policy and attitude is not uniform among countries within a region and even within a nation. Thus you have countries unable to meet regulatory conditions imposed by importing countries and importing countries unable to prevent the entry of livestock diseases because of inadequate legislation, veterinary infrastructure, human and material resources, disease intelligence, surveillance and monitoring. For example, illegal movement of animals is by far the major component of livestock trade in the ASEAN region. At every bilateral or regional meeting in ASEAN or of the FAO Regional Animal Production and Health Commission for Asia and the Pacific (APHCA), concern over unregulated livestock movement across national borders have been expressed as the major cause for FMD outbreaks.

The World Food Summit Declaration and Plan of Action provides a clear indication of the commitment of the signatory nations to prevent, control and eradicate transboundary diseases that have direct effect on food production, availability and security. The EMPRES Programme of the FAO envisages "the prompt and effective containment and control of the most serious epidemic livestock diseases, as well as newly emerging diseases, by progressive elimination on a regional and global basis through international co-operation involving early warning, early/rapid reaction, enabling research and co-ordination". We have come to the

stage of implementation on a national and on a regional basis, of the components of the EMPRES Programme.

Some countries in Asia, such as Malaysia and Thailand, have on a bilateral level implemented measures, particularly at borders, that seek to reduce the risks of disease through entry of livestock and livestock products. These have been through import regulations, border controls, quarantine, vaccination, buffer zones, surveillance and monitoring. These measures are subject to supply and demand forces that regulate livestock trade. For example, it is estimated that 300,000 to 400,000 beef cattle and buffaloes per year move into Thailand illegally from bordering areas of Myanmar, Laos and Cambodia. Illegal movement of cattle and buffaloes into Malaysia is in the order of 30,000 per year, similar in numbers to the annual legal imports. Even if these countries make a commitment to reduce this illegal trade it will be difficult to implement because of the lack of adequate legislation or its enforcement, and the inadequate veterinary infrastructure in some of these countries. It is, therefore, of prime importance to add another ingredient to the EMPRES Programme on a national level—that of enabling infrastructure.

Regionalisation is an essential progression of national and bilateral measures for effective prevention and control of transboundary livestock diseases and is the declared objective of the EMPRES Programme. Regionalisation is also important from the point of view of formulation, development and implementation of control and eradication programmes for specific diseases, such as FMD in the ASEAN Region and rinderpest in the Indian sub-continent. The WFS Plan of Action emphasises that co-ordinated and shared responsibilities among nations within a region are essential. There are a number of constraints in enabling and encouraging this to take place.

Malaysia and Thailand, in spite of having a sound veterinary infrastructure, resources and the political will to control and eradicate FMD, has not achieved the targets because of widespread disease incursions into their territories from neighbouring countries. It is, therefore, important to view eradication programmes as being implemented on a regional basis as in the case of rinderpest under the GREP. Otherwise, efforts of one or two countries in a region will not achieve the desired results especially with the liberalisation of trade and trade practices under the WTO's Sanitary and Phytosanitary Agreement.

To implement the EMPRES Programme against transboundary livestock diseases, simultaneously in all the affected countries of a region, with different levels of political and economic development and especially varying levels of veterinary infrastructure, will pose major problems. One option would be to implement the Programme on a zonal basis with the view of creating Disease-Free Zones (DFZ). If the DFZs are also inclusive of border areas an effective mechanism for the prevention and control of transboundary diseases, that spread by movement of animals, may be obtained. With EMPRES inputs of technical expertise and training, surveillance, monitoring and reporting of transboundary diseases can be achieved. These efforts can be augmented with inputs of training and laboratory capabilities provided within the region by countries that are more advanced in disease prevention and control strategies. This will meet the objective of having co-ordinated and shared responsibilities among neighbouring countries.

## **APPENDIX 4**

### **DEVELOPMENT OF EMPRES AT THE NATIONAL LEVEL**

#### **The Concept**

## DEVELOPMENT OF EMPRES AT THE NATIONAL LEVEL

### The Concept

#### 1. Summary

The 106th FAO Council (June, 1994) authorised the Director General to establish a priority programme, the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases. This has become known as EMPRES. The plant component of EMPRES directs its attention to the desert locust while the animal diseases component addresses a group of epidemic diseases. The principles of this programme were endorsed and restated by the World Food Summit in November 1996, through commitment #3 of the Summit's Plan of Action.

EMPRES was created to meet the special emergency requirements of disasters caused by transboundary spread of crop and animal pests and diseases. Transboundary animal diseases are a serious hazards to the food security of many vulnerable livestock owning communities, and greatly restrict trade. National responses to these have often been far too slow and inadequate, and diseases have been allowed to spread widely, greatly increasing the ultimate control costs. EMPRES serves to stimulate the technical support which is necessary to ensure early warning and effective rapid responses to these diseases. A major thrust of its Global Rinderpest Eradication Programme (GREP), is to plan and facilitate the global eradication of this animal disease problem.

Central to the concept of a global system for EMPRES is the goal contained in World Food Summit Plan of Action for Commitment #3 which embodies the twin principle of effective prevention and progressive control of transboundary animal diseases. The challenge to the international community is to ensure that these principles are adopted by individual member countries in animal disease control programmes. FAO Member countries should be encouraged to improve national emergency prevention systems (i.e., national EMPRES) against epidemic diseases. A key factor in developing EMPRES at national, regional and global level is to foster effective surveillance and emergency preparedness for transboundary animal diseases. Two factors are crucial to the development of effective targeted surveillance, early warning and early response:

- an effective electronic communication network including, telephone, e-mail and Internet systems, and
- a training programme for the national EMPRES liaison officer and Chief Veterinary Officers.

#### 2. Rationale

- a) The food security of many of the worlds' 800 million chronically undernourished people depends in a large measure upon the livestock which they own. This may be a direct or indirect dependence. Disease outbreaks have a serious negative impact upon this. The livestock products of meat, milk poultry and eggs are complemented by the indirect support to their food security gained from the supplies of dung for fuel, crop cultivation, draught power for cultivation and transport, and hides and skins for marketing or personal use.
- b) These food resources are continuously available to the owners and the food security ensured by the stability of the livestock is a key to their survival.
- c) The World Food Summit highlighted the impact of pests and diseases on sustained food production. Commitment #3 of the Rome Declaration on the World Food Summit Plan of

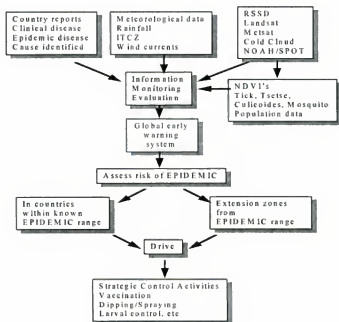
Action reads: "seeks to ensure effective prevention and progressive control of transboundary animal diseases". This was in response to the Heads of State and Governments awareness of the actual and potential impact of these diseases upon sustained livestock productivity and trade in livestock and animal products. These are the principal concerns of the international community and the target of current strategies for assuring food security.

- d) In June 1994, the FAO Council had approved the Director General's proposals to establish a special group within AGAH, EMPRES, to address these diseases. EMPRES has the mandate to establish emergency prevention systems for transboundary animal and plant pests and diseases.
- e) These diseases are: "those that are of significant economic, trade and or food security importance for a considerable number of countries; which can easily spread to other countries and reach epidemic proportions; and where their control/management, including exclusion, requires co-operation between several countries."
- f) EMPRES has an animal and plant disease component. The plant pest currently addressed is the desert locust, the animal disease component is designed to: "promote the effective containment and control of the most serious epidemic livestock diseases as well as emerging diseases, by progressive elimination on a regional and global basis through international co-operation involving early warning, early reaction, enabling research and co-ordination".
- g) The impact of occurrences of diseases in relation to the world demand for animal protein, the greatly improved transport and communication systems, together with a widespread collapse of public services and privatisation, has become much greater. Political and demographic changes in Eastern Europe and elsewhere with globalisation of world trade in livestock products all increase their importance. Outbreaks of diseases have a serious negative effect upon trade in livestock.
- h) The first EMPRES expert consultation in July 1996 recommended the grouping of EMPRES target diseases into three categories:
- those of strategic importance—rinderpest, FMD and CBPP.
  - those requiring tactical attention—Rift valley Fever (RVF), PPR, Lumpy Skin Disease (LSD), African Swine fever (ASF), and
  - evolving or emerging diseases—Classical Swine Fever (CSF), and Newcastle Disease (ND) in village chickens.
- i) The initial thrust of EMPRES has been to promote the eradication of rinderpest, the most important of the transboundary diseases, from the whole world by the year 2010. The implementation of the GREP by Member Countries through co-ordination by regional organisation has involved all the four prime elements of EMPRES, namely early warning, early reaction, research and co-ordination. Thus the first EMPRES Expert Consultation was able to chart out the blueprint for the progressive eradication by the year 2010. The consultation also made specific recommendations for regional co-operation in FMD and CBPP progressive control. FAO through EMPRES has also supported national governments with technical and material resources to meet emergencies caused by epidemics of ND, RVF, LSD and ASF.
- j) The next phase of the EMPRES Special Programme is to improve the Early Warning and Early Reaction Capability at Central, Regional and National levels. This should involve effective promotion of the concepts of effective prevention and progressive control of epidemic diseases so that FAO Member Countries themselves and their regional

organisations give high priority to the imperatives of National Emergency Prevention Systems (National-EMPRES) against transboundary animal diseases.

- k) Failure to identify an epidemic disease problem early leads to a failure to take appropriate containment and elimination action. Inevitably, this results in expensive and protracted control measures. On the other hand, reporting epidemic disease may have a serious negative impact upon the livestock trade of the country. This has led to under reporting and jeopardised successful international control strategies.
- l) Emerging diseases which are transmitted by insect vectors are greatly influenced by cyclic changes in climate, which favour their emergence in epidemic form. Early warning of these changes can be derived from satellite data and used to drive prophylactic vaccination campaigns. An objective of EMPRES is to monitor this data (See Figure 1). Global warming may extend the range of many vector borne diseases and may greatly increase their importance. This can apply to tsetse, tick, mosquito and *Culicoides* transmitted diseases.

Figure 1. A flow chart illustrating the steps involved in prediction of epidemics of Rift Valley fever and need for vaccination



- m) Early reaction to such emergencies may not be possible because countries are unprepared. They do not have the resources such as vaccines available nor sufficient funds to mobilise responses. Delays occur, which allow far greater spread of the diseases than might have happened had the initial foci been recognised and met with an appropriate response.
- n) Management systems for animal health in many countries have been decentralised. There may be no direct chain of command from a central headquarters which may delay and limit the effectiveness of responses.
- o) Countries of Eastern and Central Europe as well as Central Asia are particularly vulnerable to the spread of transmissible animal diseases such as FMD, CSF and sheep pox. This is likely to follow liberalised trade, weakened public sector controls and inadequate surveillance and emergency preparedness.

### 3. Objectives

1. The development objective of the EMPRES programme is to facilitate sustained livestock production and trade in livestock and animal products thus contributing to food security and poverty alleviation.
2. The immediate objective is to stimulate the capability of member countries to effectively contain a group of transboundary diseases.
3. The target is to encourage member countries to establish EMPRES units in countries in which the transboundary group of diseases are endemic, which are affected by them, or are considered to be at greatest risk from them. Some prioritisation is required to select these. The prioritisation will be based upon selected criteria, they will necessarily be grouped.
4. A summary of the objectives, outputs and activities follows:

#### **Objective 1 To ensure the food security of livestock owning populations**

Output Greatly reduced losses from epidemic diseases

Activities

- Create a national capacity for the implementation of the EMPRES principles for control of transboundary diseases
- Create a regional or sub regional EMPRES presence to co-ordinate clusters of countries in their efforts to establish the above

#### **Objective 2. To reinforce the ability of countries to effectively contain the most serious epidemic disease affecting livestock**

Output

- A national commitment to minimise the impact of these diseases
- The establishment of early warning capacity among livestock owning communities
- Improved communications to facilitate flow of information to national animal health services
- National contingency plans to allow rapid reaction to disease emergencies

#### **Objective 3 To establish a global early warning system for epidemic diseases**

Output Open lines of a communicating network between central, regional, sub regional and national EMPRES Units by e-Mail

#### Activities

- Create a central data base at FAO HQ in Rome
- Establish a predictive capacity and strategic control driven by up to date information
- Apply GIS and remote sensing satellite technology for prediction of spread of disease
- Monitor animal movement, populations, demography, geopolitical and economic data
- Use latest molecular biological methods in diagnosis and epidemiology

**Objective 4 To promote a National EMPRES Unit for the early warning of transboundary disease, in countries which are affected by them or are at greatest risk from them**

#### Activities

- Select priority countries and sub regions
- Place up to date information technology in situ for epidemic disease control
- Train staff in information collection and data base management
- Train regional and district staff in disease recognition
- Outreach to livestock owning communities to promote reporting of epidemic disease
- Develop national contingency plans for disease emergencies

**Objective 5 To improve the capacity of countries to react to disease emergencies**

#### Outputs

- More effective responses to disease emergencies
- Up to date inventory of resources necessary to mount emergency responses
- Standardisation of equipment required
- Emergency disease master plan prepared
- Emergency funding identified or contingency made for access

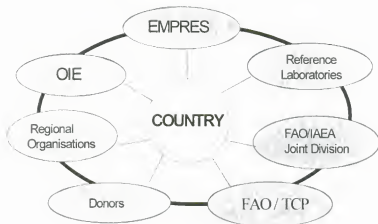
#### Activities

- Regional exercises in emergency responses to epidemic disease ('clusters' of countries encouraged to participate)
- Weaknesses in national resources available for emergency responses identified
- National emergency disease co-ordinating committee
- Identify suppliers of vaccine for epidemic diseases

#### 4. The EMPRES global network

- a) EMPRES is a global concept involving member countries, regional organisations and various international agencies and organisations (see Figure 2.). Central to the whole concept is the active participation of member countries both individually and in regional groupings.
- b) The country or region threatened by an epidemic disease is central to the whole programme. The country or region needs to develop appropriate surveillance and early warning systems, have an effective and transparent disease reporting system internally as well as to neighbours and to the international organisations especially the OIE and FAO (and the WHO where zoonoses are concerned). Coupled with this the country/region should have a practical emergency preparedness plan for the eventuality of an outbreak of an epidemic diseases which otherwise is either foreign or under control. Concomitant with such a plan should be the acceptance by member countries that sustained livestock production and productivity is only possible in the absence of certain epidemic diseases,

Figure 2. The global concept of EMPRES



- c) The OIE is the world animal health organisation responsible for the dissemination of official information on the occurrence of transmissible animal diseases, the most important of which are the so-called List A diseases, which are of a transboundary nature. The OIE monitors the international animal health code and standards for diagnosis of transmissible animal diseases primarily from the point of view of trade harmonisation,
- d) Regional and sub-regional organisations work towards developing an effective and common approach towards epidemic disease control in their geographical territories. The Pan-American Health Organisation (PAHO), EC and OAU-IBAR are examples of regional intergovernmental organisations that operate on a wide regional/continental basis in the Americas, Europe and Africa. PAHO, through the Pan American FMD Centre (PAFMDC) and the Inter-American Institute of Food Protection and Zoonoses (INPPAZ), provides technical support to countries in the Americas. The EC develops and maintains the sanitary conditions necessary for an open market within the European Union, while IBAR manages

the PARC among other activities. Regional organisations provide the appropriate forum for planning and implementation of the prevention and control strategies for transboundary animal diseases as envisaged through the EMPRES programme,

- c) Reference laboratories and collaborating centres play an important role in the EMPRES global network by providing specialist referral diagnosis, molecular analysis expertise and undertaking targeted research. Reference laboratories are designated by FAO, OIE and WHO (for zoonotic diseases).
- f) The Joint FAO/IAEA Division provides specific support to the EMPRES Programme by assisting Member Countries with the technology for diagnosis and surveillance of transboundary animal diseases, particularly those that have been classified by the first EMPRES Expert Consultation as of strategic importance, namely rinderpest, FMD, CBPP,
- g) Donor agencies have a major role in EMPRES in that they often support epidemic disease control programmes, such as PARC in Africa, SAREC in south Asia and the Hemispheric Plan for the Eradication of FMD from the Americas. A sustainable National-EMPRES concept is likely to require donor support to member countries and regional organisations so as to ensure effective prevention and adequate preparedness against epidemic diseases as adopted in the World Food Summit Plan of Action, Commitment #3,
- h) The FAO TCP has increasingly become a crucial player in providing timely early response to emergencies due to transboundary animal diseases,
- i) EMPRES at the national, regional and global level needs co-ordination so that there is effective surveillance and early warning to permit early and effective early response to disease outbreaks so that they can be contained and prevented from developing into major epidemics. Responsibility for this must be shared by all the participants in the global EMPRES network.

## **5. Development of co-ordination mechanisms**

The resurgence of epidemic diseases of a transboundary character, has highlighted the requirement for greater co-ordination of the control efforts on a regional basis. The existence of the diseases has a serious impact upon the agreements which regulate free trade. The security in trade of livestock and livestock products depends to a considerable extent upon risk assessment, and this in turn must be based upon good information and judgement. A key objective of the EMPRES Global Early Warning System (EMPRES-GEWS) is to facilitate this process through improved communications networks for disease information exchange.

The development of co-ordination mechanisms through which EMPRES may operate at national, regional and headquarters level is shown in figures 3 and 4. Consequently, within the EMPRES global network there are functions which primarily pertain to the international or global level, some which are primarily regional and those which are clearly a national responsibility.

A strong synergism between the global and regional organisations is an essential prerequisite for a global EMPRES network and for effective national EMPRES.

Figure 3.

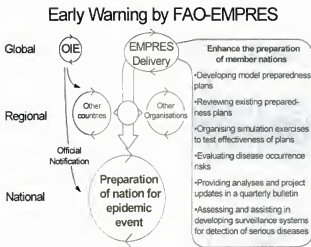
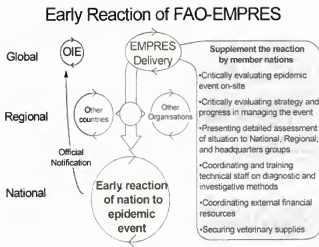


Figure 4.



The functions of the Central unit would be to;

- create the hub of the EMPRES disease information network,
- support the Regional and National network of EMPRES linked epidemiologists,
- collect disease intelligence information, serological information, molecular epidemiology data, RSSD and other data and establish an EMPRES data base,
- establish International contingency funds to meet EMPRES disease emergencies,
- provide current EMPRES disease situation updates for each Region, on the basis of the above,
- organise and manage GIS inputs and disease mapping activities for EMPRES diseases,
- disseminate technical information related to the EMPRES diseases,
- define problem areas and facilitate research on EMPRES disease diagnosis and epidemiology,
- liaise with other international and regional organisations,
- develop training manuals, standard operating procedures for emergency response procedures and contingency plans to be used by EMPRES, and
- organise and manage Regional workshops, training seminars and other meetings related to EMPRES activities as required.

The responsibilities of the regional EMPRES Units could be summarised as;

- assess the existing institutional and technical capability within the region to provide early warning and mount effective emergency responses to transboundary epidemic diseases,
- assist in developing national capacity for early warning and emergency response capability in the countries in the region,
- define the problems which present the greatest risk within countries of the region and create clusters of those sharing the same problems,
- assist in the creation of national EMPRES units in the countries of the region linked with the headquarters in FAO,
- establish a training capacity for the national implementation of early warning systems, emergency responses and contingency plans in the region,
- assist in the creation of realistic contingency plans for each country for EMPRES group diseases. In particular try to ensure practical implementation exercises are carried out and that funding sources are identified for emergency use,
- assess the national capability (institutional and technical) and requirements for laboratory diagnosis and serology, and field tests for EMPRES group diseases,
- regularly assess the ongoing status of countries within the region with regard to EMPRES group diseases,
- monitor and co-ordinate efforts to record all livestock movements between countries in the region,
- network all relevant epidemiological information from the national epidemiologists, and develop predictive models based upon the following principles shown in figure 5., and
- organise training seminars, workshops and operational meetings as appropriate to the EMPRES activities in the region, or in response to emergency situations.

## **6. Development of a country focus**

- a) EMPRES should be country-oriented programme based upon a commitment to minimise the impact of EMPRES diseases and improve food security of their livestock owners. It is hoped that it would be nationally driven,

b) Effective surveillance, recording, and reporting at the field level are fundamental to national early warning systems. The improvement of the disease surveillance system depends on positive and effectual change at the local level.

c) EMPRES deals with transboundary diseases. Consequently, the concept of national emergency prevention systems is best developed on the basis of a 'cluster' of countries having common epidemiological situations. The identification of clusters of countries would be based upon,

- the role of the livestock sub sector in the agricultural economy,
- the interest among local, national and regional stake holders to combat and prevent epidemic diseases,
- the socio-economic impact of transboundary diseases,
- the epidemiological situation in adjacent countries based upon epidemiological risk and biotope,
- regional livestock population movements and trade, and
- the technical feasibility to reduce and contain the disease problem.

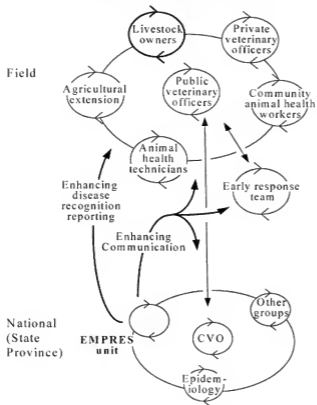
d) National EMPRES Unit

Participating Member countries within each epidemiological cluster should be encouraged to set up National EMPRES Units each with a designated National EMPRES Liaison officer being an experienced officer selected by the CVO of the country. The person should be experienced in epidemiology and the management and control of epidemic diseases by vaccination and other means. It would also include support staff and a departmental epidemiologist. Some of the functions are depicted in Figure 5.

e) Role of the community and the private sector:

- The collaborative involvement of livestock owners, producers associations, extension workers, community-based non-governmental organisations and animal health workers is essential for the success of the National EMPRES units. They should be involved in seminars, workshops and discussions at which the clinical recognition and importance of reporting of EMPRES group diseases is emphasised. The latest computer based visual and other aids will be used in this training to establish a base for more effective early warning systems amongst the livestock owning communities.
- The private veterinarians and the community based animal health workers can play important roles in the contingency planning for and mounting of Emergency Responses to epidemic diseases. Their potential to support public sector animal health services in these emergencies is considerable.
- Procedures for reporting any suspicion of EMPRES group epidemic diseases should be available to the above groups, and the lines for the communication of such information to the animal health services must be established, and
- The co-operation of the civil administration, police, army and other services who are likely to be involved in disease emergencies should be sought to assist the animal health services. Their roles should be clearly defined.

Figure 5. Some of the functions of the national EMPRES unit



## **APPENDIX 5**

### **SUGGESTED 'CLUSTERS' OF COUNTRIES**

## SUGGESTED 'CLUSTERS' OF COUNTRIES

Table 1. 'Clusters' of countries and phases of development to facilitate the adoption of EMPRES at the national level

Region	'Cluster' <sup>1</sup>	Prevention priority	Control priority	Collaborating organisation	Phase
1. Asia & the Pacific	ASEAN	Rinderpest	FMD	ASEAN, OIE	2
	SAARC	Rinderpest	Rinderpest, PPR	SAARC	1
	ECO	Rinderpest	Rinderpest, PPR	?	1
2. The Near-East	Turkey, Syria, Israel, Lebanon, Jordan, Palestinian Authority	Rinderpest	PPR, FMD	?	2
	GCC	Rinderpest	Rinderpest, FMD, PPR	GCC	2
	North Africa-UMA	Rinderpest, PPR	FMD	UMA	2
3. Africa	ECOWAS	Rinderpest	CBPP, PPR	OAU, ECOWAS	2
	Lake Chad Basin	Rinderpest	Rinderpest, CBPP	OAU	1
	IGAD, EAC	Rinderpest	Rinderpest, CBPP	OAU, EAC, IGAD	1
	SADC	Rinderpest	CBPP, FMD	OAU, SADC	2
4. Europe	Eastern	Rinderpest, FMD	FMD	EU-FMD	2
5. Latin America & the Caribbean	nd <sup>2</sup>	nd	nd	nd	nd

<sup>1</sup> The names and membership of the organisations and regional groupings are detailed in Table 2 on the following page<sup>2</sup> Not determined

Table 2. Details of names and membership of organisations and/or regional groupings with which EMPRES could develop 'cluster' countries

Acronym	Name	Member countries
ASEAN	Association of South East Asian Nations	Brunei-Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, Myanmar Laos (Cambodia)
SAARC	South Asian Association for Regional Co-operation	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
ECO	Economic Co-operation Organisation	Afghanistan, Iran, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan, Azerbaijan, Turkey
GCC	Gulf Co-operation Council	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE
UMA	Union de Maghreb Arabe	Morocco, Tunisia, Algeria, Libya, Mauritania
ECOWAS	Economic Community of West African States	Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo
	Lake Chad Basin + Nigeria	Central African Republic, Chad, Niger, Zaire
IGAD	Inter-Governmental Authority on Development	Ethiopia, Kenya, Uganda, Djibouti, Somalia, Eritrea, Sudan
EAC	East African Community	Uganda, Kenya, Tanzania,
SADC	Southern African Development Community	Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe, Mauritius
	South-eastern Europe	Albania, Greece, Romania, Macedonia, Bosnia-Herzegovina, Croatia, Yugoslavia, Slovenia,

## **APPENDIX 6**

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1	Animal breeding: selected articles from the <i>World Animal Review</i> , 1977 (C E F S)	42	Animal energy in agriculture in Africa and Asia, 1984 (E/F S)
2	Eradication of hog cholera and African swine fever, 1978 (E F S)	43	Olive by-products for animal feed, 1985 (Ar E F S)
3	Insecticides and application equipment for tsetse control, 1977 (E F)	44/1	Animal genetic resources conservation by management, data banks and training, 1984 (E)
4	New feed resources, 1977 (E/F/S)	44/2	Animal genetic resources: cryogenic storage of germplasm and molecular engineering, 1984 (E)
5	Bibliography of the criollo cattle of the Americas, 1977 (E/S)	45	Maintenance systems for the dairy plant, 1984 (E)
6	Mediterranean cattle and sheep in crossbreeding, 1977 (E F)	46	Livestock breeds of China, 1984 (E F S)
7	The environmental impact of tsetse control operations, 1977 (E F)	47	Réfrigération du lait à la ferme et organisation des transports, 1985 (F)
7 Rev. 1	The environmental impact of tsetse control operations, 1980 (E F)	48	La fromagerie et les variétés de fromages du bassin méditerranéen, 1985 (F)
8	Declining breeds of Mediterranean sheep, 1978 (E F)	49	Manual for the slaughter of small ruminants in developing countries, 1985 (E)
9	Slaughterhouse and slaughtering construction, 1978 (E F S)	50	Better utilization of crop residues and by-products in animal feeding: research guidelines - 1. State of knowledge, 1985 (E)
10	Treating straw for animal feeding, 1978 (C E F S)	50/2	Better utilization of crop residues and by-products in animal feeding: research guidelines - 2. A practical manual for research workers, 1986 (E)
11	Packaging, storage and distribution of processed milk, 1978 (E)	51	Dried salted meats: charque and carne-de-sol, 1985 (E)
12	Ruminant nutrition: selected articles from the <i>World Animal Review</i> , 1978 (C E F S)	52	Small-scale sausage production, 1985 (E)
13	Buffalo reproduction and artificial insemination, 1979 (E*)	53	Slaughterhouse cleaning and sanitation, 1985 (E)
14	The African trypanosomiasis, 1979 (E F)	54	Small ruminants in the Near East - Vol. I. Selected papers presented for the Expert Consultation on Small Ruminant Research and Development in the Near East (Tunis, 1985), 1987 (E)
15	Establishment of dairy training centres, 1979 (E)	55	Small ruminants in the Near East - Vol. II. Selected articles from <i>World Animal Review</i> 1972-1986, 1987 (Ar E)
16	Open yard housing for young cattle, 1981 (Ar E F S)	56	Sheep and goats in Pakistan, 1985 (E)
17	Prolific tropical sheep, 1980 (E F S)	57	The Awassi sheep with special reference to the improved dairy type, 1985 (E)
18	Feed from animal wastes: state of knowledge, 1980 (C E)	58	Small ruminant production in the developing countries, 1986 (E)
19	East Coast fever and related tick-borne diseases, 1980 (E)	58/1	Animal genetic resources data banks - 1. Computer systems study for regional data banks, 1986 (E)
20/1	Trypanotolerant livestock in West and Central Africa - Vol. 1. General study, 1980 (E F)	58/2	Animal genetic resources data banks - 2. Descriptor lists for cattle, buffalo, pigs, sheep and goats, 1986 (E F S)
20/2	Trypanotolerant livestock in West and Central Africa - Vol. 2. Country studies, 1980 (E F)	59/3	Animal genetic resources data banks - 3. Descriptor lists for poultry, 1988 (E F S)
20/3	Le bétail trypanotolérant en Afrique occidentale et centrale - Vol. 3. Bilan d'une décennie, 1988 (F)	60	Sheep and goats in Turkey, 1986 (E)
21	Guideline for dairy accounting, 1980 (E)	61	The Przewalski horse and restoration to its natural habitat in Mongolia, 1986 (E)
22	Recursos genéticos animales en América Latina, 1981 (S)	62	Milk and dairy products: production and processing costs, 1988 (E F S)
23	Disease control in semen and embryos, 1981 (C E F S)	63	Proceedings of the FAO expert consultation on the substitution of imported concentrate feeds in animal production systems in developing countries, 1987 (C E)
24	Animal genetic resources - conservation and management, 1981 (C E)	64	Poultry management and diseases in the Near East, 1987 (Ar)
25	Reproductive efficiency in cattle, 1982 (C E F S)	65	Animal genetic resources of the USSR, 1989 (E)
26	Camels and camel milk, 1982 (E)	66	Animal genetic resources - strategies for improved use and conservation, 1987 (E)
27	Deer farming, 1982 (E)	67/1	Trypanotolerant cattle and livestock development in West and Central Africa - Vol. I, 1987 (E)
28	Feed from animal wastes: feeding manual, 1982 (C E)	67/2	Trypanotolerant cattle and livestock development in West and Central Africa - Vol. II, 1987 (E)
29	Echinococcosis/hydatidosis surveillance, prevention and control. FAO/UNEP/WHO guidelines, 1982 (E)	68	Crossbreeding <i>Bos indicus</i> and <i>Bos taurus</i> for milk production in the tropics, 1987 (E)
30	Sheep and goat breeds of India, 1982 (E)	69	Village milk processing, 1968 (E F S)
31	Hormones in animal production, 1982 (E)	70	Sheep and goat meat production in the humid tropics of West Africa, 1989 (E/F)
32	Crop residues and agro-industrial by-products in animal feeding, 1982 (E/F)	71	The development of village-based sheep production in West Africa, 1988 (Ar E F S) (Published as Training manual for extension workers, M/S5840E)
33	Haemorrhagic septicaemia, 1982 (E F)	72	Sugarcane as feed, 1988 (E/S)
34	Breeding plans for ruminant livestock in the tropics, 1982 (E F S)	73	Standard design for small-scale modular slaughterhouses, 1988 (E)
35	Off-tastes in raw and reconstituted milk, 1963 (Ar E F S)		
36	Ticks and tick-borne diseases: selected articles from the <i>World Animal Review</i> , 1983 (E F S)		
37	African animal trypanosomiasis: selected articles from the <i>World Animal Review</i> , 1983 (E F)		
38	Diagnosis and vaccination for the control of brucellosis in the Near East, 1982 (Ar E)		
39	Solar energy in small-scale milk collection and processing, 1983 (E F)		
40	Intensive sheep production in the Near East, 1983 (Ar E)		
41	Integrating crops and livestock in West Africa, 1983 (E F)		

75	Small ruminants in the Near East – Vol. III. North Africa, 1989 (E)	110	L'amélioration génétique des bovins en Afrique de l'Ouest, 1993 (F)
76	The eradication of ticks, 1989 (E/S)	111	La utilización sostenible de hembras F1 en la producción del ganado lechero tropical, 1993 (S)
77	Ex situ cryoconservation of genomes and genes of endangered cattle breeds by means of modern biotechnological methods, 1989 (E)	112	Physiologie de la reproduction des bovins trypanotolérants, 1993 (F)
78	Training manual for embryo transfer in cattle, 1991 (E)	113	La technologie des fromages au lait de dromadaire ( <i>Camelus dromedarius</i> ), 1993 (F)
79	Milking, milk production hygiene and udder health, 1989 (E)	114	Food losses due to non-infectious and production diseases in developing countries, 1993 (E)
80	Manual of simple methods of meat preservation, 1990 (E)	115	Manuel de formation pratique pour la transplantation embryonnaire chez la chèvre et la chèvre, 1993 (F/S)
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The Rome Declaration on World Food Security, approved by heads of State and government at the World Food Summit in November 1996, states: "we will pursue participatory and sustainable food, agriculture, fisheries, forestry and rural development policies and practices in high and low potential areas, which are essential to adequate and reliable food supplies at the household, national, regional and global levels, and combat pests, drought and desertification, considering the multifunctional character of agriculture". Commitment 3 of the World Food Summit Plan of Action affirms (Objective 3.1) that "To this end, governments, in partnership with all actors of civil society, and with the support of international institutions, will, as appropriate ... Seek to ensure effective prevention and progressive control of plant and animal diseases, including especially those which are of transboundary nature, such as rinderpest, cattle tick, foot and mouth disease and desert locust, where outbreaks can cause major food shortages, destabilize markets and trigger trade measures; and promote concurrently, regional collaboration in plant pests and animal disease control and the widespread development and use of integrated pest management practices". This volume contains the report of an expert consultation convened to advise FAO management on the appropriate means by which the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) (Livestock Diseases Programme) can best contribute towards meeting this objective.

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